WILDLIFE REVIEW

NUMBER 139 SEPTEMBER 1970

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WILDLIFE REVIEW

An abstracting service for wildlife management
Issued for the information of cooperators
by the Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Service
UNITED STATES DEPARTMENT OF THE INTERIOR

September 1970 Patuxent Wildlife Research Center, Laurel, Md. 20810 No. 139

Use of funds for printing this publication approved
by the Director of the Bureau of the Budget, December 1, 1970.

CONTENTS

General conservation
- Natural resources & climate ... 2
- Soils ... 2
- Bibliographies, directories, biography, history ... 3

Plants
- General, ecology, techniques .. 3
- Floras, communities, taxonomy . 4

Wildlife
- Biotas, ecology, natural history ... 4
- Natural areas & refuges ... 5
- Nature protection & rare & extinct species ... 6
- Morphology, physiology, behavior, migration ... 6
- Effects of chemicals, weather, cars, etc. ... 6
- Parasites & diseases ... 12
- Biometrics ... 13
- Techniques ... 13
- Management & research, general ... 14
- Hunting areas & problems ... 15
- Introductions ... 15
- Food habits & techniques ... 15
- Predation, crop damage, control ... 16
- Reports of organizations & reports of harvests ... 17
- Management & ecology of habitats & animals
  - Wetlands & wildlife ... 17
  - Farmland & wildlife ... 18
  - Rangeland & wildlife ... 18
  - Forestland
    - Management for & damage by wildlife ... 19
  - Stripped land & misc. habitats ... 20

Mammals
- General ... 20
- Techniques ... 21
- Faunas & manuals ... 21
- Populations, home ranges, communities ... 22
- Parasites & diseases ... 23
- Shrews, moles, bats ... 24
- Rabbits & pikas ... 27
- Rodents
  - Miscellaneous ... 28
  - Rattus & Mus ... 38
  - Sciurids ... 39
  - Beaver ... 41
  - Muskrat & nutria ... 42
- Fur animals, general ... 42
- Carnivores
  - Bears ... 43
  - Raccoon, ringtail, coati ... 43
  - Mustelids ... 44
  - Dogs, wolves, foxes ... 46
- Big game
  - General ... 48
  - Deer (Odocoileus) ... 57
- Marine ... 60
- Other groups ... 62

Birds
- General ... 63
- Techniques ... 65
- Morphology & physiology ... 66
- Behavior ... 68
- Migration & banding reports ... 73
- Manuals, faunas, communities .. 75
- Populations & fluctuations 80
- Economics, control, mortality ... 82
- Parasites & diseases ... 84
- Game birds--general ... 85
- Quail ... 85
- Pheasants ... 87
- Grouse, partridge, etc. ... 88
- Turkey ... 92
- Doves & pigeons ... 92
- Waterfowl ... 94
- Swans & geese ... 99
- Cranes, rails, shorebirds ... 100
- Hawks & owls ... 106
- Blackbirds, starlings, crows .. 110
- Other birds ... 113

Reptiles & amphibians ... 116
Author index ... 123

Except as indicated, abstracts are by Kenneth J. Chiavetta, editor, Mary L. Fisher, editorial assistant, and Kristi V. Löfgren, conservation aide.

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NATURAL RESOURCES & CLIMATE

Dasmann, Raymond F. THE DESTRUCTION OF CALIFORNIA. *Macmillan Co.* (New York). viii + 247 p. + 32 pls., 5.75 x 8.5 in. 1965. Price $5.95. *WR 139: 2*

"Beginning with the earliest settlers attracted to Eldorado, the Indians, Professor Dasmann details what successive waves of humanity have done to change the face of the land. He shows what clearing the forests, burning off grass cover, and raising sheep have meant in terms of soil erosion and exhaustion, in the extermination of a wealth of wildlife. He etches an unforgettable picture of how selfish, powerful mining interests have despoiled California's mineral resources and how lumbermen threaten the destruction of its redwood forests. The problems described are the subject of headlines everywhere in the United States: a desperate, unending search for unpolluted water; the blight of urban sprawl; the 'strip towns' stretching out alongside the everlengthening highways; the culture of the automobile graveyard, of smog and superburgers, of great cities like San Francisco destroying their natural settings and manmade wonders."

Dasmann, Raymond F. A DIFFERENT KIND OF COUNTRY. *Macmillan Co.* (New York). viii + 276 p., illus., 5.75 x 8.5 in. 1968. Price $5.95. *WR 139: 2*

The author "concerns himself with the human environment--what we are doing to it, and what we must do to keep it fit for people to live in. He pleads with passion and eloquence for diversity in human cultures and ways of life and for the preservation of natural diversity as our greatest hope for keeping the door open for future change, to enable man to correct his mistakes and alter his directions. The book ranges from cities--the need for building diversity into them--to the values of wilderness, undisturbed lands, natural communities. It is critical of existing practices, from the management of wild lands to the renewal of cities, and asks that we consider more carefully both the ecological principles that govern the operations of the environment and the human values that we are trying to accommodate."

de Vos, A. THE ECOLOGIST-BIOGEOGRAPHER IN RESOURCES ANALYSIS AND ENVIRONMENTAL PLANNING. *Canadian Geographer* 11(3): 162-165. 1967. *WR 139: 2*

[Forestry & Forest Industries Div., FAO, Rome, Italy.]

SOILS

Bourlier, Bob G., and others. SOIL SURVEY OF TORRANCE AREA, NEW MEXICO. *SCS.* i + 149 p., 39 figs. + single-fold maps based on aerial photos and bound in. Jan. 1970. For sale by Supt. Documents. *WR 139: 2*

Edwards, Ronald D., and others. SOIL SURVEY OF THE VENTURA AREA, CALIFORNIA. *SCS.* i + 104 p., 1 fig. + 1 pl. + double-fold maps based on aerial photos and bound in. Apr. 1970. For sale by Supt. Documents. *WR 139: 2*

SOILS--Continued

Ellyson, W. J., and others. SOIL SURVEY OF WOOD AND WIRT COUNTIES, WEST VIRGINIA. *SCS.* i + 79 p., 9 figs. + single-fold maps based on aerial photos and bound in. Apr. 1970. For sale by Supt. Documents. *WR 139: 3*
With a section on use of soils for wildlife.

Girdner, Charles L., Jr., and Wayne E. Richardson. SOIL SURVEY OF DICKENS COUNTY, TEXAS. *SCS.* i + 67 p., 17 figs. + single-fold maps based on aerial photos and bound in. Feb. 1970. For sale by Supt. Documents. *WR 139: 3*
With a section on wildlife.

Hall, Richard L. SOIL SURVEY OF WICOMICO COUNTY, MARYLAND. *SCS.* i + 90 p., 19 figs. + single-fold maps based on aerial photos and bound in. Jan. 1970. For sale by Supt. Documents. *WR 139: 3*
With a section on wildlife.

Hokanson, Hilding L., and others. SOIL SURVEY OF LINCOLN COUNTY, MINNESOTA. *SCS.* i + 84 p., 11 figs. + single-fold maps based on aerial photos and bound in. Jan. 1970. For sale by Supt. Documents. *WR 139: 3*

Hoppes, Ronald R., and others. SOIL SURVEY OF HITCHCOCK COUNTY, NEBRASKA. *SCS.* i + 50 p., 10 figs. + single-fold maps based on aerial photos and bound in. Apr. 1970. For sale by Supt. Documents. *WR 139: 3*
With a section on management of soils for wildlife.

Palmisano, Angelo W., Jr. PLANT COMMUNITY--SOIL RELATIONSHIPS IN LOUISIANA COASTAL MARSHES. *Ph.D. thesis, La. State Univ.* xi + 98 p. 1970. *WR 139: 3*

Wiedenfeld, C. C., and others. SOIL SURVEY OF RUNNELS COUNTY, TEXAS. *SCS.* i + 60 p., 19 figs. + single-fold maps based on aerial photos and bound in. Mar. 1970. For sale by Supt. Documents. *WR 139: 3*
With a section on use of soils for wildlife.

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Katz, Herbert, and Marjorie Katz. MUSEUMS, U.S.A. / A HISTORY AND GUIDE. *Doubleday & Co., Inc.* x + 395 p. + 40 black and white halftones on 16 [pls.], 6.25 x 9.5 in. 1965. Price $6.50. *WR 139: 3*
"MUSEUMS, U.S.A. is both an entertaining social history and a unique reference guide, for it tells where the museums are, how they got there, who put them there, and what they contain. The Appendix includes a listing by state and city of more than 2500 operating museums. The index is cross-referenced, so that it is possible to locate anything from an important Rembrandt to a major entomological collection."

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Lyon, L. Jack. LENGTH- AND WEIGHT-DIAMETER RELATIONS OF SERVICEBERRY TWIGS. *J. Wildl. Mgmt.* 34(2): 456-460, 1 fig. Apr. 1970. *WR 139: 3*
[Intermountain Forest & Range Expt. Sta., Ogden, Utah.] Abstract: In a study of the relation between serviceberry *(Amelanchier alnifolia)* twig diameters and twig lengths and weights, a total of 852 twigs from 110 plants on 11 different sites was examined. Equations for the regression of length and weight on diameter were developed. Despite significant variations in regression related to site, plant size, and twig location on the plant, relatively small samples of browsed twigs were found to provide precise estimates of browse utilization.

PLANTS--GENERAL, ECOLOGY, TECHNIQUES--Continued

Pierce, William R., and Lee E. Eddleman. A FIELD STEREOPHOTOGRAPHIC TECHNIQUE FOR RANGE VEGETATION ANALYSIS. *J. Range Mgmt.* 23(3): 218-220, 2 figs. May 1970. *WR 139: 4*

[Univ. Mont., Missoula.] Highlight: Color negative film used in a camera with a lens providing a good depth of field at short focal distances has produced stereo color prints that permit accurate identification and measurement of range vegetation with a pocket stereoscope. This system can overcome many of the problems of inventorying a range.

Tew, Ronald K. SEASONAL VARIATION IN THE NUTRIENT CONTENT OF ASPEN FOLIAGE. *J. Wildl. Mgmt.* 34(2): 475-478. Apr. 1970. *WR 139: 4*

[Intermountain Forest & Range Expt. Sta., Ogden, Utah.] Abstract: Chemical composition of aspen *(Populus tremuloides)* leaves, collected on three sampling dates during the growing season of 1966, varied greatly. Content of calcium, magnesium, sodium, and fat increased as the season progressed, whereas total nitrogen, phosphorus, and potassium content decreased significantly. Browse quality therefore changed with season. Aspen leaves contain most calcium and magnesium late in the season; this would help to maintain desirable soil properties when leaves drop.

PLANTS--FLORAS, COMMUNITIES, TAXONOMY

Berslina, I. P., and V. N. Karpovich. [DEVELOPMENT OF VEGETATION UNDER THE EFFECT OF COLONIAL BIRD ACTIVITIES.] *Bot. Zhur.* 54(5): 690-696. 1969. [From Biol. Abstr. 51(8), 1970. In Russian with English summ.] *WR 139: 4*

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Aguesse, Pierre. QU'EST-CE DONC QUE L'ÉCOLOGIE? [WHAT IS ECOLOGY?] *Courr. Nature Homme Oiseau* 5: 10-16, illus. 1968. [From Biol. Abstr. 51(13), 1970.] *WR 139: 4*

[Fac. Sci., Orleans, France.] Predator-prey relationship is discussed.

Anonymous. [THE ECOLOGY OF BIRDS AND MAMMALS.] *Leningrad Univ.* (Leningrad). 160 p., illus. 1969. Price 1 ruble, 10 kopecks. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 7I574K. Transl. of Russian abstr.] *WR 139: 4*

Balcells, E. LA DISTRIBUCION DE LOS VERTEBRADOS EN ALTO ARAGON. [VERTEBRATES DISTRIBUTION IN ALTO ARAGON.] *An. Edafol. Agrobiol.* 26(1/4): 205-217. 1967. [From Biol. Abstr. 51(3), 1970. In Spanish with English and German summ.] *WR 139: 4*

Daciuk, J. LA FAUNA DEL PARQUE NACIONAL LAGUNA BLANCA. ESTUDIO ZOOECOLOGICO PRELIMINAR. [THE FAUNA OF THE LAGUNA BLANCA NATIONAL PARK, IN THE PATAGONIAN STEPPE, ARGENTINA. PRELIMINARY ZOO-ECOLOGIC STUDY.] *An. Parques Nacl.* 11(2): 225-320, illus. 1968. [From Biol. Abstr. 51(8), 1970. In Spanish with English summ.] *WR 139: 4*

[Estac. Biol. Laguna Blanca, Buenos Aires, Argentina.]

Dansereau, Pierre, and others. CONVERSATIONS ON ECOLOGY XIV - XX / CONSERVATION ORGANIZATIONS. *Sarracenia* no. 12. 50 p. May 1970. *WR 139: 4*

[N.Y. Botanical Garden, Bronx, N.Y.] The seven letters which are reprinted were published in The New York Botanical Garden's periodical *The Garden Journal* (vol. 16-17) in the years 1966 and 1967. The topics of ecology and conservation are discussed in these informal letters. Examples of mismanagement, unconcern, and avenues of possible help are stated.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY--Continued

Gaskin, David E. THE ORIGINS OF THE NEW ZEALAND FAUNA AND FLORA: A REVIEW. *Geogr. Review* 60(3): 414-434, 5 figs. July 1970. *WR 139: 5*
[Univ. Guelph, Guelph, Ontario, Canada.] "All three dispersal routes discussed in this review--across the Tasman Sea from eastern and southern Australia and Tasmania, along the Melanesian Arcs, and from Antarctica and South America--appear to have assisted in the assemblage of the present and fossil biota of New Zealand. Possibly in terms of numbers of taxa the Australian element is weaker than the others, but speculation on these lines is hardly profitable. However, the trans-Tasman is the one route for which there is no evidence of direct land connections at any time."

Godoy, Juan Carlos. FAUNA SILVESTRE (WILDLIFE). VOLS. 1 AND 2. Tome VIII of the series: Evaluación de los Recursos Naturales de la Argentina [Status of the Natural Resources of Argentina]. *Consejo Federal de Inversiones* (Buenos Aires). xiii + 527 p., 27 figs. 1963. *WR 139: 5*
Volume 1 deals with the following chapters: 1. Definition and classification of wildlife; 2. Zoogeography; 3. Hunters and hunting, maritime game activities, and fur farming and other captive animals; 4. Review of animal pests and predators (mammals, birds and reptiles) and control programs; 5. Review of wildlife protection and conservation; 6. General bibliographical list with 1427 titles, apart from classified bibliographies at the end of each chapter previously cited. Volume 2 presents the chronological catalogue and transcription of the principal international, federal, national and provincial laws and regulations pertaining tc game and wildlife conservation in Argentina. The author stresses the need for more active and technical wildlife programs; intensive investigations, ecologically oriented; the organization of effective game reserves and fauna sanctuaries parallel to national parks; the re-examination of the federal and provincial legislation; and the promotion of a healthy conservation conscience of the people through adequate education at all levels. Finally, the status of wildlife should be re-evaluated every ten years.

Jaeger, Edmund C. DESERT WILDLIFE. *Stanford Univ. Press* (Stanford, Calif.). x + 308 p., illus., 5.5 x 8.5 in. 1968. Price $2.95, paperbound. *WR 139: 5*
"A series of intimate and authentic sketches depicting the lives of native animals of our Southwestern deserts, from mammals to birds and reptiles, as well as many of the lesser desert denizens such as land snails, scorpions, millepedes, and common insects of special interest. The mammals and birds have been given specially full treatment. Although the approach is basically scientific, this book is designed for readers of all ages who wish to learn of the ways of the wild animal neighbors met on desert travels. It is a revision of the author's popular Our Desert Neighbors (Stanford University Press, 1950) with additional chapters, many new field notes, photographs, and sketches."

Remmert, Herrmann. DER WASSERHAUSHALT DER TIERE IM SPIEGEL IHERE EKOLOGISCHEN GESCHICHTE. [THE WATER BALANCE OF ANIMALS AS REFLECTED IN THEIR ECOLOGICAL HISTORY.] *Naturwissenschaften* 56(3): 120-124, illus. 1969. [From Biol. Abstr. 51(8), 1970. In German.] *WR 139: 5*
[Il. Zool. Inst. Univ., Erlangen-Nuernberg, Germany.]

Webb, Robert G., Rollin H. Baker, and Peter L. Dalby. VERTEBRADOS DE LA ISLA DEL TORO, VERACRUZ. [VERTEBRATES OF ISLA DEL TORO, VERACRUZ.] *An. Inst. Biol. Univ. Nacl. Autón., México*, 38, *Ser. Zool.* (1): 1-8. 1967. In Spanish with English summ. *WR 139: 5*

WILDLIFE--NATURAL AREAS & REFUGES

Curry-Lindahl, Kai. SAREK, STORA SJÖFALLET, PADJELANTA--THREE NATIONAL PARKS IN SWEDISH LAPLAND. *Rabén & Sjögren* (Stockholm). 141 p., illus. 1968. Price 9.50 kronor. *WR 139: 5*
These three parks with a total area of 2105 square miles are contiguous and each of them is larger than any other national park in Europe. Together they

represent an area of land and water stretching from the coniferous forests, swamps and bogs in the lowland to Sweden's highest mountains. The geology, topography, climate, vegetation and vertebrate animals of this large area are discussed.

Goethe, Friedrich. SPEZIELLE FRAGEN DES KUSTENVOGELSCHUTZES. [SPECIAL QUESTIONS ON COASTAL BIRD RESERVES.] *Angew. Ornithol.* 3(2): 90-94. 1968. [From Biol. Abstr. 51(8), 1970. In German.] *WR 139: 6*
[Inst. Vogelforsch., Wilhelmshaven/Rustersiel, Germany.]

Kohlus, H. ERHOLUNGSRAUM FÜR DEN MENSCHEN UND VOGELSCHUTZ IN DEN USA. [RECREATION AREAS FOR PEOPLE AND BIRD PROTECTION IN THE UNITED STATES.] *Ornithol. Mitteil.* 22(4): 78-79. Apr. 1970. In German. *WR 139: 6*
[Alte Ricklinger Strasse 15C, Garbsen/Han., Germany.]

Owen, John S. DEVELOPMENT AND CONSOLIDATION OF TANZANIA NATIONAL PARKS. *Biol. Conserv.* 1(2): 156-158. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 6*
[Tanzania Natl. Park, Arusha, Tanzania.]

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Hurcomb, Lord. PROTECTION OF WILD LIFE IN LONDON AND ITS OUTSKIRTS BY PUBLIC AUTHORITIES. *Biol. Conserv.* 1(2): 166-169, illus. 1969. [From Biol. Abstr. 51 (12), 1970.] *WR 139: 6*
[Soc. Promot. Nature Reserves, London, England.]

Huxley, Julian. WILDLIFE IN DANGER. *Biol. Conserv.* 1(4): 276-279. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 6*
[31 Pond Street, London, England.]

Simon, Noel M. PROPOSALS FOR FIELD INVESTIGATIONS OF RARE AND ENDANGERED MAMMALS. *Biol. Conserv.* 1(4): 280-290. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 6*
[IUCN, Morges, Switzerland.]

Thas, J. SITUATION ACTUELLE DE LA PROTECTION DE LA NATURE EN QUELQUES PAYS D'EUROPE. [PRESENT SITUATION OF WILDLIFE PRESERVATION IN SEVERAL COUNTRIES OF EUROPE.] *Meded. Rijksfac. Landbouwetensch. Gent* 33(1): 41-72. 1968. [From Biol. Abstr. 51(7), 1970. In French with Dutch summ.] *WR 139: 6*

Wayre, Philip. THE ROLE OF ZOOS IN BREEDING THREATENED SPECIES OF MAMMALS AND BIRDS IN CAPTIVITY. *Biol. Conserv.* 2(1): 47-49, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 6*
[Norfolk Wildl. Park, Norwich, Norfolk, England.]

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Folk, G. Edgar, Jr. PHYSIOLOGICAL RESEARCH IN NORTHERN ALASKA. *Arctic* 22 (3): 315-326, 9 figs. Sept. 1969. *WR 139: 6*
[Univ. Iowa, Iowa City.] Review paper on avian and mammalian physiological research.

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Ash, J. S. TOXIC CHEMICALS AND WILDLIFE IN BRITAIN. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 379-388. 1965. In English with French and German summ. *WR 139: 6*
[Game Res. Sta., Fordingbridge, Hampshire, England.]

Backstrom, Jorgen. DISTRIBUTION STUDIES OF MERCURIC PESTICIDES IN QUAIL AND SOME FRESHWATER FISHES. *Acta Pharmacol. Toxicol.* 27(suppl. 3): 5-103, illus. 1969. [From Biol. Abstr. 51(13), 1970.] *WR 139: 7*
[Roy. Vet. Coll., Stockholm, Sweden.]

Bagley, G. E., W. L. Reichel, and E. Cromartie. IDENTIFICATION OF POLYCHLORINATED BIPHENYLS IN TWO BALD EAGLES BY COMBINED GAS-LIQUID CHROMATOGRAPHY-MASS SPECTROMETRY. *J. Assoc. Official Analytical Chemists* 53(2): 251-261, 16 figs. Mar. 1970. *WR 139: 7*
[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Polychlorinated biphenyls are widely used industrial compounds marketed in the United States under the trade name Aroclor. They have appeared in fish and wildlife tissues in this country and in Europe. They are known to be toxic, but more importantly, their presence in samples along with the commonly occurring organochlorine pesticides complicates the analysis to a serious degree, making identification of pesticide residues by GLC without preliminary separation extremely unreliable. Residues of both polychlorinated biphenyls and organochlorine pesticides were present in eagle carcasses. Many of the polychlorinated biphenyl components had retention times identical with those of certain organochlorine pesticide residues. Identification was accomplished by preliminary separations on thin layer plates followed by combined GLC-mass spectrometry.

Berglund, F., and M. Berlin. RISK OF METHYLMERCURY CUMULATION IN MAN AND MAMMALS AND THE RELATION BETWEEN BODY BURDEN OF METHYLMERCURY AND TOXIC EFFECTS. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 258-273. 1969. *WR 139: 7*
Injuries to the central nervous system, with neurological signs of varying type depending on the species studies, seem to appear at a mercury concentration in the brain of the order of 8 µg/g or more. The fetal brain seems to be more sensitive to methylmercury than the adult brain. The body burden of methylmercury varies in different species when the toxic concentration is reached in the brain. It is concluded that, due to the slow elimination of methylmercury--its biological half-life varying between twenty to seventy days in different species--there is a considerable risk for cumulation of methylmercury in the tissue of mammals at prolonged exposure to methylmercury compounds.--From abstr.

Bitman, Joel, Helene C. Cecil, Susan J. Harris, and George F. Fries. DDT INDUCES A DECREASE IN EGGSHELL CALCIUM. *Nature* (London) 224(5214): 44-46, illus. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 7*
[Agr. Res. Serv., Beltsville, Md.]

Boyle, C. L. OIL POLLUTION OF THE SEA: IS THE END IN SIGHT? *Biol. Conserv.* 1(4): 319-327, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 7*
[Brit. Adv. Comm. Oil Pollut. Sea, London, England.]

Bunyan, P. J., D. M. Jennings, and Archie Taylor. ORGANOPHOSPHORUS POISONING. CHRONIC FEEDING OF SOME COMMON PESTICIDES TO PHEASANTS *(PHASIANUS COLCHICUS)* AND PIGEONS *(COLUMBA LIVIA)*. *J. Agr. Food Chem.* 17(5): 1027-1032, illus. 1969. [From Biol. Abstr. 51(4), 1970.] *WR 139: 7*
[Min. Agr., Fisheries & Food, Tolworth, Surrey, England.]

Butler, P. A. THE SIGNIFICANCE OF DDT RESIDUES IN ESTUARINE FAUNA. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 205-220, 3 figs. 1969. *WR 139: 7*
Estuarine pollution levels reflect the intensity of agriculture in the associated river basin. Most of the positive analyses show residue levels in the range of 10 to 200 µg/kg of DDT, DDE, or DDD; dieldrin and endrin residues are typical of a few estuaries. Because of occasional residues in the range of 10 to 20 µg/g in fish and oysters, experiments were undertaken to determine effects of a DDT-contaminated diet on fish and crustaceans. Dietary levels of 2 to 5 µg/g of *p,p'*-DDT caused 35 to 100% mortality within two to ten weeks in laboratory populations of shrimp, crabs, and fish.--From abstr.

Carr, Harold D. A LITERATURE REVIEW ON EFFECTS OF HERBICIDES ON SAGE GROUSE *(CENTROCERCUS UROPHASIANUS)*. *Colo. Dept. Game, Fish & Parks Spec. Rept.* 13: 1-16. 1968. [From Biol. Abstr. 51(12), 1970.] *WR 139: 8*

deFreitas, A. S. W., J. S. Hart, and H. W. Morley. CHRONIC COLD EXPOSURE AND DDT TOXICITY. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 361-367. 1969. *WR 139: 8*

Abstract: Normal development of nonshivering heat producing mechanisms in cold (6° C) acclimated rats as measured by food consumption, growth rate and electromyographic activity is unaffected by up to 300 ppm DDT in the diet. Under conditions of extreme cold stress, sufficient to elicit maximal oxygen consumption, there is also no significant DDT effect. However, under less extreme stress conditions causing a slower but more exhaustive depletion of the animal's energy reserves, these dietary levels of DDT cause a significantly deleterious effect on survival.

Gehring, P. J., and J. F. Buerge. THE DISTRIBUTION OF 2,4-DINITROPHENOL RELATIVE TO ITS CATARACTOGENIC ACTIVITY IN DUCKLINGS AND RABBITS. *Toxicol. Appl. Pharmacol.* 15(3): 574-592, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 8*

[Dow Chem. Co., Midland, Mich.]

Guthrie, F. E., and W. E. Donaldson. DISTRIBUTION OF DDT AND DIELDRIN IN THE AVIAN EMBRYO. *Toxicol. Appl. Pharmacol.* 16(2): 475-481. Mar. 1970. *WR 139: 8*

[N.C. State Univ., Raleigh.] Experimentation with domestic chicken.

Herman, S. G., R. L. Garrett, and R. L. Rudd. PESTICIDES AND THE WESTERN GREBE. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 24-53, 7 figs. 1969. *WR 139: 8*

One of the best-known examples of trophic concentration of persistent pesticide residues occurs in Clear Lake, California. The entire lacustrine ecosystem contains chlorinated hydrocarbon residues, chiefly of the DDT series. The effects of trophic concentration are most obvious in the western grebe *(Aechmophorus occidentalis)*, a fish-eating bird, in which both acute mortality and reproductive inhibition, presumably attributable to high residue loads, have combined to cause population declines. This report centers on probable pathways of residue transfer and on the precise manner in which reproduction might be affected. Various aspects of the population biology of the western grebe and its prey species are described.--From abstr.

Hunt, E. G., J. A. Azevedo, Jr., L. A. Woods, Jr., and W. T. Castle. THE SIGNIFICANCE OF RESIDUES IN PHEASANT TISSUES RESULTING FROM CHRONIC EXPOSURES TO DDT. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 334-360. 1969. *WR 139: 8*

Penned pheasants were placed on various dietary regimens containing 10, 100, 250, and 500 ppm of the insecticide. Residue data are presented for tissues of test birds, their eggs and feces. Results demonstrate that residue levels in whole blood, fat, reproductive organs and eggs reflected dietary levels of DDT.--From abstr.

Jenning, Wolf. GERFAHRDUNG DER VOGELWELT DURCH QUECKSILBER. [ENDANGERING BIRDLIFE BY MERCURY.] *Vogelwelt* 89(5): 161-168. 1968. [From Biol. Abstr. 51 (12), 1970. In German with English summ.] *WR 139: 8*

Jernelöv, A. CONVERSION OF MERCURY COMPOUNDS. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 68-74. 1969. *WR 139: 9*

Fish contain methylmercury in instances where the original discharge contains other types of mercury compounds. Mercury discharge in the form of metallic mercury, inorganic divalent mercury, phenylmercury and alkoxi-alkylmercury can all be converted in nature to methylmercury.--From abstr.

Johnels, A. G., and T. Westermark. MERCURY CONTAMINATION OF THE ENVIRONMENT IN SWEDEN. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 221-241, 8 figs. 1969. *WR 139: 9*

Mercury content in the feathers of goshawks remained nearly level from the middle of the previous century until 1940, after which a well-documented increase in mercury content appears. Mercury is a pollutant in the aquatic environment and apparently follows the general increase in industrial activity.--From abstr.

Kearney, P. C., R. G. Nash, and A. R. Isensee. PERSISTENCE OF PESTICIDE RESIDUES IN SOILS. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 54-67, 3 figs. 1969. *WR 139: 9*

The highly toxic phosphates do not persist for extended periods of time in soils. In contrast, some of the chlorinated hydrocarbon insecticides may persist for four to five years under normal rates of application. Disappearance of most complex organic pesticides from soil follows a first-order reaction curve. Disappearance of simpler organic pesticides often exhibits a lag phase followed by rapid metabolism by soil microorganisms. Heavy metals and arsenic pesticides tend to accumulate at the application site.--From abstr.

Keith, J. A. SOME RESULTS AND IMPLICATIONS OF PESTICIDE RESEARCH BY THE CANADIAN WILDLIFE SERVICE. *Trans. 33rd Federal-Provincial Wildl. Conf., Edmonton, Alberta, 8-10 July 1969.* p. 27-30. 1969. *WR 139: 9*

Ljunggren, Lars. THE INFLUENCE OF MERCURY POISONING ON THE REPRODUCTION AND GENERAL HEALTH OF WOOD PIGEONS. *Viltrevy* 5(8): 423-434. 1968. In English with Swedish abstr. *WR 139: 9*

[Univ. Lund, Lund, Sweden.] Summary: Wood pigeons with a mercury content in the liver varying between 5 and 48 mg Hg/kg liver have been studied in regard to reproductive ability and general health. The livers of urban wood pigeons have lower mercury content than those of rural ones, obviously dependent upon differences in feeding habits in spring, when most mercury is ingested. No changes in body weight and liver glycogen could be found in the wood pigeons studied compared with normal mean values. The liver weight was a little reduced. However, as a whole there was no indication of impaired health. The study of pituitary cells and gonads has clearly shown that the reproductive instinct seems to be completely uninfluenced by mercury poisoning. In contrast the activity of the milk-producing crop suggests that hatching results are poorer, which seems to be the gravest consequence of mercury poisoning in wood pigeons.

Miller, M. W., and G. G. Berg, editors. CHEMICAL FALLOUT / CURRENT RESEARCH ON PERSISTENT PESTICIDES. *Charles C. Thomas* (Springfield, Ill.). xxii + 531 p., illus., 6.25 x 9.25 in. June 1969. Price $22.50. *WR 139: 9*

This symposium volume has been praised for its unusually large number of meaty papers. Many of these papers are listed separately in this issue of *WR*. The volume is especially strong in authoritative papers on mercury pollution by Swedish experts. Organochlorine pesticides such as DDT and dieldrin receive much attention from American and British workers, with special attention to their effects on birds. Dr. John Robinson's efforts to discount the effects of pesticides on birds are attacked vigorously in a discussion section that merits special attention. In all, this volume should be in every library concerned with problems of environmental pollution.--Courtesy/ William H. Stickel.

Ohmart, Robert D., and E. Linwood Smith. USE OF SODIUM CHLORIDE SOLUTIONS BY THE BREWER'S SPARROW AND TREE SPARROW. *Auk* 87(2): 329-341, 5 figs. Apr. 1970. *WR 139: 10*

[Univ. Calif., Davis.] Tree sparrows *(Spizella arborea)* were able to withstand less water deprivation and sodium chloride solution than Brewer's sparrows *(S. breweri)*. The low water requirements of Brewer's sparrows and their ability to maintain body weight on salinities equaling sea water are unusual among land birds.--Courtesy/ Paul A. Stewart.

Ratcliffe, D. A. CHANGES ATTRIBUTABLE TO PESTICIDES IN EGG BREAKAGE FREQUENCY AND EGGSHELL THICKNESS IN SOME BRITISH BIRDS. *J. Appl. Ecol.* 7(1): 67-117, 7 figs. Apr. 1970. *WR 139: 10*

[Nature Conservancy, Abbots Ripton, Huntingdon, England.] Major topics: Recent frequency of egg breakage; Nature of egg breakage; Parental destruction as the proximate cause of egg breakage; Other possible causes of egg breakage; Decrease in eggshell weight; Causes of the eggshell effect; Connection between environmental pollution, decrease in eggshell weight, egg breaking, breeding failure and population change; and Significance of egg breaking in a "natural" situation.

Risebrough, R. W. CHLORINATED HYDROCARBONS IN MARINE ECOSYSTEMS. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 5-23. 1969. *WR 139: 10*

Polychlorinated biphenyls, chlorinated hydrocarbons which are extensively used in industry and agriculture, are now widely distributed in marine ecosystems of the Pacific Ocean. Birds contain higher concentrations of these chemicals than fish; tissues of the peregrine falcon have contained the highest amounts which have so far been recorded. The polychlorinated biphenyls have not yet been detected in samples of airborne particulates but their observed distribution in the sea indicates that they are dispersed by wind currents and that their fallout pattern is similar to that of the DDT compounds.--From abstr.

Robinson, J. ORGANOCHLORINE INSECTICIDES AND BIRD POPULATIONS IN BRITAIN. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 113-173, 11 figs. 1969. *WR 139: 10*

Notwithstanding the difficulties of interpretation of the published results it is concluded on the basis of convergent probabilities that (a) grain-eating birds were poisoned by cyclodiene insecticides as a result of one particular usage of these compounds between 1955 and 1962; (b) whilst the possibility cannot be excluded, the declines of certain predatory birds in the 1950's cannot be related to organochlorine insecticides with any degree of practical certainty; (c) there is no evidence of serious effects on the population status of predatory birds by these compounds since 1962; and (d) common farmland species of birds have suffered no inimical effects attributable to the organochlorine insecticides.--From abstr.

Rosato, Peter, and Denzel E. Ferguson. THE TOXICITY OF ENDRIN-RESISTANT MOSQUITOFISH TO ELEVEN SPECIES OF VERTEBRATES. *BioScience* 18(8): 783-784. Aug. 1968. *WR 139: 10*

[Miss. State Univ., State College.] *Gambusia affinis* can tolerate endrin residues much greater than most of its predators, which represents a hazard. Various predator fish, turtles, snakes, and birds were tested by force-feeding of resistant mosquitofish, with size, mortality data, weight relationship of "predator" and prey, and survival time being recorded and analyzed.

Shilova, S. A., A. A. Smirnov, V. A. Ognev, and L. D. Voronova. [EFFECT OF SEVIN ON SEXUAL FUNCTIONS OF WARM-BLOODED ANIMALS.] *Med. Parazitol. Parazit. Bolez.* 37(5): 604-609, illus. 1968. [From Biol. Abstr. 51(9), 1970. In Russian with English summ.] *WR 139: 10*

[Min. Health USSR, Moscow, USSR.]

Stickel, W. H., L. F. Stickel, and J. W. Spann. TISSUE RESIDUES OF DIELDRIN IN RELATION TO MORTALITY IN BIRDS AND MAMMALS. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 174-204. 1969. *WR 139: 11*

An experiment was performed with *Coturnix* to learn what residue levels were indicative of death from dieldrin poisoning. Birds were fed diets containing 250, 50, 10, and 2 ppm dieldrin for periods up to 158 days. When half of a group was dead, the other half was sacrificed for comparison of residues in dead and survivors. Dosage levels controlled time to depth, but did not control residue levels in the dead. Residues in liver and carcass proved to be misleading and complicated by changes in lipid content. Brain residues correlated well with death although residues in dead and survivors overlapped.--From abstr.

Suzuki, T. NEUROLOGICAL SYMPTOMS FROM CONCENTRATION OF MERCURY IN THE BRAIN. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 245-257, 7 figs. 1969. *WR 139: 11*

Mice which had been given a single, or repeated, peroral dose of different amounts of methylmercury chloride showed neurological symptoms for a peak concentration of mercury of more than 20 µg/g of wet tissue. Death followed the occurrence of neurological symptoms for peak concentrations of more than 30 µg/g.--From abstr.

Tucker, Richard K., and D. Glen Crabtree. TOXICITY OF ZECTRAN INSECTICIDE TO SEVERAL WILDLIFE SPECIES. *J. Econ. Entomol.* 62(6): 1307-1310. Dec. 1969. *WR 139: 11*

[Denver Wildl. Res. Center, Denver, Colo.] Birds were more susceptible to single oral doses than mammals, reacted more quickly to intoxication, and were more quickly affected. Deaths appeared to occur from respiratory failure. Zectran did not show any marked cumulative effect in subacute oral tests with mallards, chukars, and mule deer.--From abstr.

van den Bosch, R. THE TOXICITY PROBLEM--COMMENTS BY AN APPLIED INSECT ECOLOGIST. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 97-112. 1969. *WR 139: 11*

The applied insect ecologist's concept of toxicity is discussed and contrasted with the concepts of persons concerned with narrower aspects of toxicity. The organic insecticide revolution is reviewed with emphasis on the lack of ecological consideration in the development of modern pesticides.--From abstr.

Westöö, G. METHYLMERCURY COMPOUNDS IN ANIMAL FOODS. In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 75-93, 7 figs. 1969. *WR 139: 11*

The substitution of methoxyethylmercury for methylmercury compound as a seed disinfectant in Sweden in 1966 caused a decrease in the methylmercury content of eggs, meat, and liver in 1967 to 1968 to approximately one-third of the average values found earlier. Marine fish caught near the shore and freshwater fish often show high methylmercury levels. Frequently more than 0.4 mg of Hg/kg (very infrequently, as much as 5-10 mg/kg) of fish muscles has been found in Sweden. Levels above 1 mg of Hg/kg are usually caused by industrial discharge of mercury compounds.--From abstr.

Wolman, Allen A., and Alfred J. Wilson, Jr. OCCURRENCE OF PESTICIDES IN WHALES. *Pesticides Monitoring J.* 4(1): 8-10. June 1970. *WR 139: 11*

[Bur. Commercial Fisheries, Marine Mammal Biol. Lab., Seattle, Wash.] Abstract: Organochlorine pesticides were found in tissue samples of brain, blubber, and liver from 6 of 23 gray whales, *Eschrichtius robustus*, and in each of 6 sperm whales, *Physeter catodon*, collected near San Francisco, Calif., in 1968 and 1969. Concentrations of DDT or its metabolites ranged up to 0.36 ppm in blubber tissue of gray whales, and 6.0 ppm in blubber tissue of sperm whales. The highest dieldrin concentrations were 0.075 ppm in gray and 0.019 ppm in sperm whales.

Wurster, C. F., Jr. CHLORINATED HYDROCARBON INSECTICIDES AND AVIAN REPRODUCTION: HOW ARE THEY RELATED? In: (Miller, M. W., and G. G. Berg, editors. *Chemical Fallout / Current Research on Persistent Pesticides.*) *Charles C. Thomas* (Springfield, Ill.). p. 368-389. 1969. *WR 139: 12*

On at least two continents, a pattern of diminished reproductive success of carnivorous birds coincides with the presence of chlorinated hydrocarbon residues, particularly those of DDT. Included are such birds as grebes, woodcock, various birds of prey, seabirds, and possibly others that have not been studied, although exceptions to these correlations exist. Additional information comes from various laboratory experiments and field observations including feeding experiments, egg injections, bird behavior, chick mortality, eggshell weight measurements, and enzyme induction. The data suggest that these chemicals interfere with calcium metabolism and hormonal mechanisms. Two mechanisms involving calcium metabolism are proposed to explain these observations: 1. Acute toxicity involves direct attack on the nerve axon with associated axon decalcification and symptoms of calcium deficiency. This mechanism can kill adult birds or chicks shortly after hatching. 2. Chlorinated hydrocarbons cause induction of hepatic enzymes that metabolize steroid hormones; estrogen breakdown is especially important, since estrogen influences calcium metabolism in birds. This would explain the widespread occurrence of calcium-deficient eggshells among carnivorous birds since introduction of DDT in the late 1940's. Current knowledge indicates, despite several anomalies, that certain chlorinated hydrocarbon insecticides are a probable cause of the widespread diminished reproduction of carnivorous birds.--From abstr.

WILDLIFE--PARASITES & DISEASES

Allison, Malcolm N. BROTE DE RABIA EN ANIMALES SALVAJES DEL CONDADO DE SAN DIEGO, CALIFORNIA. [THE SAN DIEGO COUNTY CALIFORNIA WILDLIFE RABIES OUTBREAK.] *Bol. Ofic. Sanit. Panamer.* 67(5): 405-415. 1969. [From Biol. Abstr. 51(12), 1970. In Spanish with English, Portuguese, and French summ.] *WR 139: 12*

Cherkasskii, B. L., and M. Ya. Lavrova. [SIBERIAN PLAGUE OF WILD ANIMALS AND THE PROBLEM OF THIS INFECTION'S NATURAL FOCALITY.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(5): 5-20, illus. 1969. [From Biol. Abstr. 51(6), 1970. In Russian with English summ.] *WR 139: 12*

[Moscow State Univ., Moscow, USSR.]

Herman, Carlton M. THE IMPACT OF DISEASE ON WILDLIFE POPULATIONS. *BioScience* 19(4): 321-330. Apr. 1969. *WR 139: 12*

[Patuxent Wildl. Res. Center, Laurel, Md.] It is postulated that disease is a product of adverse habitats. Overpopulation causes overutilization of food supplies, which results in malnutrition and a decrease in resistance to diseases. Examples of such ecological relationships in populations of Canada geese, California quail, red grouse, deer, rabbits, voles, mice and lemmings are presented.

Mehl, Reidar. EKTOPARASITTISKE UNDERSOKELSER PA FUGL OG PATTEDYR I SYD-VARANGER SOMMEREN 1966. [INVESTIGATION ON ECTOPARASITIC INSECTS ON BIRDS AND MAMMALS IN SOUTH-VARANGER, NORTH NORWAY 1966.] *Fauna* (Oslo) 20(3): 195-201, illus. 1967. [From Biol. Abstr. 51(1), 1970. In Norwegian with English summ.] *WR 139: 12*

[Univ. Zool. Mus., Oslo, Norway.]

Müller, J. TOLLWUTEBEKÄMPFUNG IN DÄNEMARK. [RABIES CONTROL IN DENMARK.] *Med. Klin.* 63(34): 1331-1334, illus. 1968. [From Biol. Abstr. 51(1), 1970. In German.] *WR 139: 12*

[Statens Vet. Serumlab., Copenhagen, Denmark.]

Parker, Richard L. IMPORTANCE OF WILDLIFE RABIES CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 25-28. 1970. *WR 139: 12*

[Office Vet. Public Health Serv., HEW, Atlanta, Ga.] See Dana, *WR 139: 16.*

WILDLIFE--PARASITES & DISEASES--Continued

Piening, C., and T. Zimmermann. DIE TOLLWUT IM LANDE SCHLESWIG-HOLSTEIN. [RABIES IN THE FEDERAL STATE SCHLESWIG-HOLSTEIN.] *Deut. Tieraerztl. Wochenschr.* 76(15): 393-396, illus. 1969. [From Biol. Abstr. 51(4), 1970. In German with English summ.] *WR 139: 13*
[Vet. Landes Schleswig-Holstein, Neumuenster, Germany.]

Santamaria, J. LA RANGE. SON ÉVOLUTION EN FRANCE ET LES MESURES MISES EN VIGUEUR. [RABIES. ITS EVOLUTION IN FRANCE AND THE VIGOROUS MEASURES TAKEN.] *Bull. Acad. Vet. Fr.* 41(9): 389-396. 1968. [From Biol. Abstr. 51(1), 1970. In French.] *WR 139: 13*
[Min. Agr., Dir. Serv., Vet., Paris, France.]

Steck, F., P. Addy, E. Schipper, and A. Wandeler. DER BISHERIGE VERLAUG DES TOLLWUTSEUCHENZUGES IN DER SCHWEIZ. [THE COURSE SO FAR OF AN EPIDEMIC OF RABIES IN SWITZERLAND.] *Schweiz. Arch. Tierheilk.* 110(12): 597-616. 1968. [From Biol. Abstr. 51(2), 1970. In German with French, Italian, and English summ.] *WR 139: 13*
[Univ. Bern, Bern, Switzerland.]

WILDLIFE--BIOMETRICS

Rosenzweig, M. L. WHY THE PREY CURVE HAS A HUMP. *Am. Nat.* 103: 81-87. 1969. [From Auk 87(2), 1970.] *WR 139: 13*

Schoener, T. W. MODELS OF OPTIMAL SIZE FOR SOLITARY PREDATORS. *Am. Nat.* 103: 277-313. 1969. [From Auk 87(2), 1970.] *WR 139: 13*
"Includes data for avian predators."

WILDLIFE--TECHNIQUES

Fitzwater, William D. TRAPPING--THE OLDEST PROFESSION. *Proc. 4th Vertebrate Pest Conf.* p. 101-108, 6 figs. 1970. *WR 139: 13*
[Univ. Calif., Davis.] See Dana, *WR 139: 16.*

Manly, B. F. J. A SIMULATION STUDY OF ANIMAL POPULATION ESTIMATION USING THE CAPTURE-RECAPTURE METHOD. *J. Appl. Ecol.* 7(1): 13-39. Apr. 1970. *WR 139: 13*
[Univ. Salford, Salford, England.] Summary: The technique of simulation on an electronic computer has been used to examine the behaviour of the methods of Fisher & Ford (1947), Jolly (1965) and Manly & Parr (1968) in estimating the parameters of animal populations on the basis of capture-recapture data. Particular consideration has been given to the effect on estimates of age-dependent mortality. The librarian of the British Museum (Natural History), London, S.W.7, has kindly agreed to store a copy of the full simulation results used in the present study. These results give the estimates obtained from the three methods of estimation for all of the ninety-six artificial populations that were simulated.

Marten, Gerald G. A REGRESSION METHOD FOR MARK-RECAPTURE ESTIMATION OF POPULATION SIZE WITH UNEQUAL CATCHABILITY. *Ecology* 51(2): 291-295, 1 fig. Early Spring 1970. *WR 139: 13*
[Univ. Calif., Berkeley.] A new regression method is presented for multiple captures on a closed population, which combines mark-recapture with "simulated" removal and tests whether the assumption of equal catchability holds, regardless of the source of bias.--Courtesy/ Paul A. Stewart.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

de Vos, Antoon. WILDLIFE MANAGEMENT IN FORESTS AND RANGES FOR AESTHETICAL PURPOSES. *Proc. Soc. Am. Foresters, Seattle, Wash., 1966.* p. 215-217. [1966.] *WR 139: 14*
[Forestry & Forest Industries Div., FAO, Rome, Italy.]

Downes, M. C. TERRITORY OF PAPUA AND NEW GUINEA / REPORT OF THE WILDLIFE ECOLOGY SECTION 1968-1969. *Papua-New Guinea Dept. Agr., Stock & Fisheries.* 12 p. July 1969. *WR 139: 14*
Indigenous and introduced wildlife were studied to examine the status and distribution of the populations, the ecological factors involved in utilization, management, and conservation of the wildlife, and special values of the wildlife for economic, social or cultural purposes. Management of the crocodile for industry as well as problems of hunting pressure on other endangered wildlife is discussed.

McDowell, Robert D., compiler. A PARTIAL INDEX OF PAPERS PRESENTED AT TECHNICAL SESSIONS OF THE NORTHEAST SECTION, THE WILDLIFE SOCIETY AT NORTHEAST FISH AND WILDLIFE CONFERENCES 1939-1967. *NE Sect. Wildl. Soc.* 15 p. [1970.] *WR 139: 14*
[Univ. Conn., Storrs.] A classified listing of papers presented in technical sessions of annual conferences. Copies of desired papers may be purchased at a cost of 10¢ per reproduced page (plus postage) from the secretary-treasurer of the Section (Robert D. McDowell).

Middleton, A. D. GAME RECORDS AND CENSUS IN GREAT BRITAIN. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 71-74. 1965. In English with French and German summ. *WR 139: 14*
[Game Res. Assoc., Fordingbridge, Hampshire, England.]

Pollock, N. C. SOME OBSERVATIONS ON GAME RANCHING IN SOUTHERN AFRICA. *Biol. Conserv.* 2(1): 18-24. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 14*
[Univ. Oxford, Oxford, England.] Game ranching could help satisfy the demand for meat in addition to conserving wild animals for scientific and esthetic purposes.

Riney, T., and P. Hill. CONSERVATION AND MANAGEMENT OF AFRICAN WILDLIFE / ENGLISH-SPEAKING COUNTRY REPORTS. *Food & Agr. Organ. United Nations* (Rome). ix + 145 p. 1967. *WR 139: 14*
Surveys of Botswana, Ethiopia, Kenya, Malawi, Nigeria, Sierra Leone, Somali Republic, Tanzania, Uganda, and Zambia were undertaken by the authors "to advise and report on the elaboration and implementation of a policy of wildlife management and conservation, and its integration into overall development programs relating to natural resources and their utilization."

Swanson, Gustav A. THE TRAINING AND EMPLOYMENT OF WILDLIFE BIOLOGISTS IN THE UNITED STATES. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 351-355. 1965. In English. *WR 139: 14*
[Colo. State Univ., Fort Collins.]

U.S. Department of Agriculture. WILDLIFE HABITAT IMPROVEMENT HANDBOOK. *USDA, Forest Serv.* FSH 2609.11. [292 p.], 132 figs. Jan. 1969. *WR 139: 14*
Methods of improving fish and wildlife habitats used by the Forest Service are reported in detail. Areas included are stream, lake, wetland, and upland improvements.

Vincent, John. THE HISTORY OF UMFOLOZI GAME RESERVE, ZULULAND, AS IT RELATES TO MANAGEMENT. *Lammergeyer* 3(11): 7-49, 14 figs. Apr. 1970. *WR 139: 14*
[Natal Parks Board, Pietermaritzburg, South Africa.] A chronological study of past land use and management practices was made.

WILDLIFE--HUNTING AREAS & PROBLEMS

Cloudsley-Thompson, J. L. ANIMAL TWILIGHT / MAN AND GAME IN EASTERN AFRICA. *Dufour* (Chester Springs, Pa.). x + 204 p., illus., 5.75 x 8.75 in. 1967. Price $6.95. *WR 139: 15*
"The book abounds with extracts of particular interest from the works of the great hunters and early explorers and details the methods and causes which have depleted the great herds of animals which once roamed the plains of Africa." Contents: The impact of man, Traditional African hunting methods, The changing scene, Firearms and human settlement, Behaviour and migration, Reactions of big game to man, Pachyderms, Carnivores, Ruminants and reptiles, and Game conservation.

De La Fouchardière, M. LA CHASSE EN BRETAGNE. [HUNTING IN BRITTANY.] *Penn Bed* 6(53): 265-268, illus. 1968. [From Biol. Abstr. 51(2), 1970. In French.] *WR 139: 15*

Schmid, E. DIE JAGD IM WALLUS. [HUNTING IN VALAIS.] *Schweiz. Z. Forstwesen (J. Forest. Suisse)* 117(8/9): 637-647, illus. 1966. [From Biol. Abstr. 51(9), 1970. In German and French.] *WR 139: 15*

Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny. [HUNTING, FURS, AND GAME.] Kirov. 1968. Price 45 kopecks. *Sbornik Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 23: 1-108. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I598K. Transl. of Russian abstr.] *WR 139: 15*

Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny. [PROBLEMS OF THE ECOLOGY OF COMMERCIALLY HUNTED ANIMALS.] *Leen. Prom.* (Moscow). 326 p., illus. 1969. Price 1 ruble, 61 kopeks. *Sbornik Trudy Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 22: 1-326. 1969. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I597K. Transl. of Russian abstr.] *WR 139: 15*

WILDLIFE--INTRODUCTIONS

Larsen, Holger S. IMPORTATION OF WILDLIFE. *Proc. 4th Vertebrate Pest Conf.* p. 179-183. 1970. *WR 139: 15*
[Bur. Sport Fisheries & Wildl., Pasadena, Calif.] See Dana, *WR 139: 16*.

WILDLIFE--FOOD HABITS & TECHNIQUES

Coon, Donald Wayne. AN EVALUATION OF FIELD COMPETITION BETWEEN THE MOURNING DOVE AND BLACKBIRDS FOR AVAILABLE GRAIN. *M.S. thesis, N.C. State Univ.* 62 p. Dec. 1968. *WR 139: 15*

de Vlaming, Victor, and Vernon W. Proctor. DISPERSAL OF AQUATIC ORGANISMS: VIABILITY OF SEEDS RECOVERED FROM THE DROPPINGS OF CAPTIVE KILLDEER AND MALLARD DUCKS. *Am. J. Bot.* 55(1): 20-26, 1 fig. 1968. *WR 139: 15*
[Univ. Calif., Berkeley.] Seeds of aquatic and semiaquatic angiosperms were fed to two representative waterbirds: killdeer *(Charadrius vociferus)* and mallard ducks *(Anas platyrhynchos)*. Resistance of the seeds to avian digestive processes depends both upon the nature of the seed coat and the species of bird through which they pass. Periods of maximum retention, greater in killdeer than in mallard ducks, were much longer than had previously been supposed. Plants with highly resistant seeds are for the most part of wide geographic distribution suggesting that the extensive range of many aquatic plants can be accredited, at least in part, to their adaptation to internal transport by birds.

Stickney, Harry Walker. PREFERENCES EXHIBITED BY THE MOURNING DOVE AND BLACKBIRDS FOR NINETEEN KINDS OF SEEDS. *M.S. thesis, Auburn Univ.* 72 p. Aug. 1967. *WR 139: 15*

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Cowan, John B. THE ROLE OF THE WILDLIFE REFUGE IN RELIEF OF VERTEBRATE PEST DAMAGE IN AGRICULTURE. *Proc. 4th Vertebrate Pest Conf.* p. 150-155. 1970. *WR 139: 16*
[Gray Lodge Area, Gridley, Calif.] See Dana, below.

Dana, Richard H., chairman. PROCEEDINGS: FOURTH VERTEBRATE PEST CONFERENCE / MARCH 3, 4, AND 5, 1970. iv + 204 p. 1970. Copies available from William D. Fitzwater, University of California, Davis, 95616, at $5.00 ($5.50 foreign). *WR 139: 16*
Many of the papers presented at the conference are listed individually in this issue of *WR*.

De Grazio, John W., and Jerome F. Besser. BIRD DAMAGE PROBLEMS IN LATIN AMERICA. *Proc. 4th Vertebrate Pest Conf.* p. 162-167. 1970. *WR 139: 16*
[Wildl. Res. Center, Denver, Colo.] See Dana, above.

Dimock, Edward J. II. TEN-YEAR HEIGHT GROWTH OF DOUGLAS-FIR DAMAGED BY HARE AND DEER. *J. Forestry* 68(5): 285-288, 5 figs. May 1970. *WR 139: 16*
[NW Forest & Range Expt. Sta., Olympia, Wash.] Abstract: The development of Douglas-fir seedlings, planted under dense bracken on an old cutover in Washington's coastal zone, was closely charted over a 10-year period. Varying amounts of damage to all seedlings were caused through clipping by snowshoe hare and browsing by black-tailed deer. Despite obviously severe pressure by deer in later years, nearly all animal-caused losses were attributed to earlier damage by hare.

Griffith, Richard E., Jr., and James Evans. A VEHICLE MOUNTED BAIT DISPENSER. *Proc. 4th Vertebrate Pest Conf.* p. 117-119, 3 figs. 1970. *WR 139: 16*
[Bur. Sport Fisheries & Wildl., Twin Falls, Idaho.] See Dana, above.

Haaften, J. L. van. A NATURAL REPELLENT. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 389-392. 1965. In English with French and German summ. *WR 139: 16*
[ITBON, Arnhem, Netherlands.] Tiger and lion dung in sacks proved to be an effective deterrent to deer and rabbit.

Koplin, James R., and Paul H. Baldwin. WOODPECKER PREDATION ON AN ENDEMIC POPULATION OF ENGELMANN SPRUCE BEETLES. *Am. Midland Nat.* 83(2): 510-515. Apr. 1970. *WR 139: 16*
[Humboldt State Univ., Arcata, Calif.] Abstract: Northern three-toed and hairy woodpeckers consumed 2 to 26% of the brood of an endemic population of the Engelmann spruce beetle, *Dendroctonus obesus*. Predation was restricted to the second-year brood and decreased the survival of this age-class by 13 to 25%. Factors to account for the disproportionate losses of first- and second-year brood in the endemic population and for differential losses of brood from the endemic and epidemic populations to woodpecker predation are suggested and discussed.

Kverno, Nelson B. STANDARDIZATION OF PROCEDURES FOR DEVELOPING VERTEBRATE CONTROL AGENTS. *Proc. 4th Vertebrate Pest Conf.* p. 138-139. 1970. *WR 139: 16*
[Denver/AID Programs, Bur. Sport Fisheries & Wildl., Denver, Colo.] See Dana, above.

Lee, James O., Jr. OUTLOOK FOR RODENTICIDES AND AVICIDES REGISTRATION. *Proc. 4th Vertebrate Pest Conf.* p. 5-8. 1970. *WR 139: 16*
[Pesticides Regulation Div., Agr. Res. Serv., Washington, D.C.] See Dana, above.

Merrill, Howard A. THE OUTLOOK FOR VERTEBRATE PEST CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 144-145. 1970. *WR 139: 16*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] See Dana, above.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL--Continued

Moore, N. W. NEW FACTORS CONTROLLING POPULATIONS OF LAND VERTEBRATES IN GREAT BRITAIN. *Proc. 4th Vertebrate Pest Conf.* p. 9-14. 1970. *WR 139: 17*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.] See Dana, *WR 139: 16.*

Radwan, M. A. DESTRUCTION OF CONIFER SEED AND METHODS OF PROTECTION. *Proc. 4th Vertebrate Pest Conf.* p. 77-82. 1970. *WR 139: 17*
[U.S. Forest Serv., Olympia, Wash.] See Dana, *WR 139: 16.*

Solman, Victor E. F. CURRENT WORK ON BIRD HAZARDS TO AIRCRAFT. *Proc. 4th Vertebrate Pest Conf.* p. 184-187. 1970. *WR 139: 17*
[Canadian Wildl. Serv., Ottawa, Canada.] See Dana, *WR 139: 16.*

Udagawa, Tatsuo. SOME VERTEBRATE PEST PROBLEMS IN JAPAN. *Proc. 4th Vertebrate Pest Conf.* p. 148-149. 1970. *WR 139: 17*
[Govt. Forest Expt. Sta., Meguro, Tokyo, Japan.] See Dana, *WR 139: 16.*

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Alberta. TWENTIETH ANNUAL REPORT OF THE DEPARTMENT OF LANDS AND FORESTS OF THE PROVINCE OF ALBERTA FOR THE FISCAL YEAR ENDED MARCH 31st 1969. *Queen's Printer* (Edmonton). 139 p., [23 figs.]. 1969. *WR 139: 17*
With a section on fish and wildlife.

Benson, Denis A. REPORT ON SALES OF THE CANADA MIGRATORY GAME BIRD HUNTING PERMIT AND WATERFOWL HARVEST AND HUNTER ACTIVITY, 1969-70. *Canadian Wildl. Serv. Progress Notes* no. 16. 34 p. July 1970. In French and English. *WR 139: 17*
[Canadian Wildl. Serv., 400 Laurier Ave. W., Ottawa, Ontario, Canada.] Total harvest, proportion of successful hunters and number of birds per successful hunter in Canada has increased for the year 1968-69. Harvest of duck increased by nearly a third, except for decreases in British Columbia and Nova Scotia. Data on permit sales to residents and non-residents of Canada, number of successful hunters, birds killed and retrieved, season bag of ducks, man-days of recreation and harvest by successful hunters of waterfowl and migratory game birds are included.

Johnson, Jim. WHAT THE HUNTER DID...IN 1969. RANDOM CARD SURVEY HELPS DETERMINE THE EFFECTIVENESS OF ALL PHASES OF BIG GAME HUNTS. *N. Mex. Wildl.* 15 (3): 9-11. May-June 1970. *WR 139: 17*
Analysis of New Mexico harvest data for deer, elk, bear, and turkey.

WETLANDS & WILDLIFE

Barthelmes, D. LIMNOLOGISCH-HYDROGRAPHISCHE GESICHTSPUNKTE FÜR DIE AUSWAHL VON SEEN ZUR ENTENFREIWASSERHALTUNG SOWIE ZUR FEINFISCHMAST IN KÄFIGEN UND DIE MÖGLICHKEITEN EINER OPTIMALEN AUFSTELLUNG VON KAFIGANLAGEN IN SEEN. [LIMNOLOGICAL-HYDROGRAPHICAL VIEWPOINTS ON CHOOSING LAKES FOR THE MAINTENANCE OF DUCKS ON PUBLIC FISHING AREAS AND FOR FINE FISH MAST IN CAGES AND THE OPTIMAL ARRANGEMENT OF CAGE INSTALLATION IN THE LAKES.] *Deutsche Fisch. Ztg.* 14(12): 353-364, illus. 1967. [From Biol. Abstr. 51(8), 1970. In German.] *WR 139: 17*
[Deutsche Akad. Landwirtschaftswiss., Berlin, Germany.]

Chabreck, Robert H. MARSH ZONES AND VEGETATIVE TYPES IN THE LOUISIANA COASTAL MARSHES. *Ph.D. thesis, Univ. Idaho.* 113 p. 1970. *WR 139: 17*

Christiansen, J. E., and J. B. Low. WATER REQUIREMENTS OF WATERFOWL MARSHLANDS IN NORTHERN UTAH. *Utah Div. Fish & Game Publ.* no. 69-12. 108 p., 24 figs. 1970. *WR 139: 17*
[Utah State Univ., Logan.] Physical and chemical properties of water in northern Utah marshland were investigated. Salt tolerance studies of important

marsh plants showed that germination, growth, and seed and tuber production decreased as salinity increased; substantial reductions in growth were observed at substrate levels exceeding 12 mmhos. Fresh water produced the best growth in all plants with the exception of the sago pondweed tubers, which showed greatest growth in slightly saline conditions (3,000 p.p.m.). Relationships were developed for estimating monthly water requirements based on considerations of evapotranspiration, quality of water, and precipitation. From the relationship developed, water requirements can be estimated for marshlands under different climatic conditions. Suggestions given for water management practices on the marshlands include recommendations on both quality and quantity of water, and suggestions as to drainage, desirable water levels, and desirable plants for efficient marshland operation.--From abstr.

Ermacoff, Nick. MARSH AND HABITAT MANAGEMENT PRACTICES AT THE MENDOTA WILDLIFE AREA. *Calif. Dept. Fish & Game, Game Mgmt. Leafl.* no. 12. 11 p., 10 figs. Aug. 1969. *WR 139: 18*
[Calif. Dept. Fish & Game, Sacramento.] Natural vegetation has been managed to encourage important plant species, while undesirable species have been inhibited. Cattails, dock, aster, mustard, cockle burr, and yellow clover are controlled, primarily by sheep grazing. Other control methods include cultivation, winter flooding, and burning.

Gollop, J. B. WETLAND INVENTORIES IN WESTERN CANADA. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 249-264, 3 figs., 2 pls. 1965. In English with French and German summ. *WR 139: 18*
[Canadian Wildl. Serv., Saskatoon, Saskatchewan, Canada.]

Korsakov, G. K. [THE EFFECT OF THE DRYING UP OF THE LAKES ON THE QUALITY OF THE AQUATIC GAME LANDS IN THE FOREST-STEPPE OF WESTERN SIBERIA AND NORTHERN KAZAKHSTAN.] *Sbornik Tr. Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 22: 47-74. 1969. [From Biol. Abstr. 51(2), 1970, from Referat. Zhur., Biol., 1969, no. 6I573. Transl. of Russian abstr.] *WR 139: 18*

Krull, John N. SEASONAL OCCURRENCE OF MACROINVERTEBRATES IN A GREEN-TREE RESERVOIR. *N.Y. Fish & Game J.* 16(1): 119-124. Jan. 1969. *WR 139: 18*
[Southern Ill. Univ., Carbondale.] Macroinvertebrates in flooded wooded lowlands of central New York offer a potentially important source of duck food during spring migration and most of the nesting season. Fairy shrimp, mosquito larvae, pulmonate snails, aquatic sowbugs, and fingernail clams are among the most abundant macroinvertebrates. Acorn mast on the flooded green-timber impoundments also is an important food source.

Rockwell, H. W. IMPORTANCE OF WETLANDS AS A NATURAL RESOURCE IN THE CONNECTICUT RIVER VALLEY IN MASSACHUSETTS. *M.S. thesis, Univ. Mass.* 82 p. 1970. *WR 139: 18*

FARMLAND & WILDLIFE

Cornwallis, R. K. FARMING AND WILDLIFE CONSERVATION IN ENGLAND AND WALES. *Biol. Conserv.* 1(2): 142-147, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 18*
[Bleasby Grange, Market Rasen, Lincolnshire, England.]

RANGELAND & WILDLIFE

Cleghorn, W. B. PUBLISHED PAPERS--VELD AND PASTURE 1945 TO 1968. *Rhodesia Agr. J. Tech. Bull.* no. 9. 26 p. 1969. *WR 139: 18*
Includes author and subject indices. "The intention is to give a wide coverage, particularly in the case of veld, because of the possible usefulness of

various studies of an ecological nature to those investigating the use and management of the veld as natural pasture, to those who are faced with practical veld management problems or to those who for various reasons require information about the composition and distribution of the natural vegetation."

Mackie, Richard J. RANGE ECOLOGY AND RELATIONS OF MULE DEER, ELK, AND CATTLE IN THE MISSOURI RIVER BREAKS, MONTANA. *Wildl. Monographs* no. 20. 79 p., 31 figs. Mar. 1970. *WR 139: 19*

[Univ. Minn., St. Paul.] A study of the food habits, range use, and interspecific relations of mule deer, elk, and cattle was conducted during 1960-1964 on a 75,000-acre area in the Missouri River Breaks in north-central Montana to provide criteria for management on ponderosa pine-juniper and related vegetation types. Comparisons of food and range-use habits and behavior of mule deer and elk indicated conflict between April and September, especially during April and early May. Heavy utilization and deteriorated condition of important browse plants for mule deer aggravated conflict after mid-May. The evidence indicated that elk were more efficient competitors than mule deer. Considerable overlap in habits of elk and cattle afforded opportunity for direct conflict during early spring and fall as well as less direct conflict resulting from use of elk wintering areas in summer by cattle and use of cattle wintering areas by elk in fall. Competition was lessened by low numbers, distribution, and movements of elk. The potential for competition between mule deer and cattle was limited by broad differences in food and range-use habits. The greatest opportunities for conflict occurred on the *Artemisia-Agropyron* habitat type in April and early May and during late summer and fall.--From summ.

Skuncke, Folke. EN RENKATASTROF ORSAKAD AV OVERUTNYTTJANDE AV ETT GOTT VINTERBETE. ETT OBSERVANDUM FOR SVENSK RENKOTSEL. [A CATASTROPHE IN A REINDEER POPULATION CAUSED BY OVERGRAZING OF A GOOD WINTER PASTURE. A CASE OBSERVED FOR THE SWEDISH REINDEER MANAGEMENT.] *Zool. Revy* 30(3/4): 105-112. 1968. [From Biol. Abstr. 51(7), 1970. In Swedish with English summ.] *WR 139: 19*

[Karl X Gustafs gata 62, Halsingborg, Sweden.]

Turcek, Frantisek J. POVODNA STEP A DRUHOTNE TRAVINY: POROVNANIE NA PODKLADE ISOSYNÚZIÍ VERTEBRÁT. [THE NATURAL STEPPE AND SECONDARY GRASSLAND: A COMPARISON BASED ON SOME ISO-SYNUSIA VERTEBRATES.] *Biologia* (Bratislava) 23(11): 863-871, illus. 1968. [From Biol. Abstr. 51(4), 1970. In (Slovak) with English and Russian summ.] *WR 139: 19*

[Slovak Acad. Sci., Banska Stiavnica, Czechoslovakia.]

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Eiberle, K. DER WALD ALS LEBENSSTATTE DES SCHALENWILDES. [THE FOREST AS PLACE OF LIFE FOR CLOVEN-HOOFED GAME.] *Schweiz. Z. Forstw.* 119(4/5): 380-392. 1968. [From Biol. Abstr. 51(2), 1970. In German with French summ.] *WR 139: 19*

[Inst. Waldbau ETH, Zurich, Switzerland.]

Halls, Lowell K. GROWING DEER FOOD AMIDST SOUTHERN TIMBER. *J. Range Mgmt.* 23(3): 213-215, 2 figs. May 1970. *WR 139: 19*

[Southern Forest Expt. Sta., Nacogdoches, Texas.] Highlight: In addition to growing timber, pine-hardwood forests of the South produce food for white-tailed deer. The food yields, and thus deer populations, are governed by timber stand density, frequency of timber cuttings, size and distribution of harvest cutting units, and application of prescribed burning.

Shaw, Samuel P. FOREST WILDLIFE RESPONSIBILITIES--WHAT'S OUR PROBLEM? *J. Forestry* 68(5): 270-273, [2 figs.]. May 1970. *WR 139: 19*

[Forest Serv., Upper Darby, Pa.] Private woodlands could contribute nearly 300 million acres of wildlife habitat if proper timber management and sustained-yield forestry is practical.

STRIPPED LAND & MISCELLANEOUS HABITATS

Smith, E. Ray. GREEN RIBBONS OF HOPE / RIGHTS-OF-WAY PLANTINGS HOLD PROMISE OF IMPROVING WILDLIFE HABITAT. *Forests & People* 20(1): 22-23, 42, illus. First Quarter 1970. *WR 139: 20*
[SCS, Alexandria, La.] Includes a table of planting materials benefitting deer, doves, quail, rabbit, squirrel, and turkeys.

MAMMALS--GENERAL

Bolschakow, W. N. ZUR ANPASSUNG DER KLEINSAUGETIERE AN DIE GEBIRGSVERHÄLTNISSE. [ON THE ADAPTATION OF SMALL MAMMALS TO MOUNTAIN CONDITIONS.] *Zool. Anz.* 180(3/4): 293-299. 1968. [From Biol. Abstr. 51(7), 1970. In German.] *WR 139: 20*
[Acad. Sci. USSR, Sverdlowsk, USSR.]

Canivenc, R., editor. ENTRETIENS DE CHIZÉ. SERIE PHYSIOLOGIE. NO. 1. CYCLES GENITAUX SAISONNIERS DE MAMMIFÈRES SAUVAGES. [CONVERSATIONS FROM CHIZÉ (FRANCE). SERIES ON PHYSIOLOGY. NO. 1. SEASONAL GENITAL CYCLES OF WILD MAMMALS. COLLOQUIM.] *Masson & Cie., Editeurs* (Paris, France). viii + 166 p., illus. 1968. Price 46 francs. [From Biol. Abstr. 51(12), 1970.] *WR 139: 20*

Folk, G. Edgar, Jr. DAILY PHYSIOLOGICAL RHYTHMS OF CARNIVORES EXPOSED TO EXTREME CHANGES IN ARCTIC DAYLIGHT. *Federation Proc.* 23(6): 1221-1228, 15 figs. Nov.-Dec. 1964. *WR 139: 20*
[Univ. Iowa, Iowa City.] "Fox, wolf, and wolverine."

Kelsall, John P. INTERACTION BETWEEN BARREN-GROUND CARIBOU AND MUSKRATS. *Canadian J. Zool.* 48(3): 605. May 1970. *WR 139: 20*
[Canadian Wildl. Serv., Edmonton, Alberta.] Abstract: Barren-ground caribou, *Rangifer tarandus groenlandicus*, have been observed to systematically expose, trample, and eat the pushups constructed on ice in winter by muskrats, *Ondatra zibethicus*, for feeding. Muskrats may be inconvenienced, or frozen out, by this behavior and the caribou may be attracted by the frozen but green vegetation of which the pushups are constructed.

Kirkpatrick, Ralph D., Dale N. Martin, and James D. McCall. RED FOX AND WOODCHUCK IN SAME BURROW. *Ind. Audubon* 47(4): 124-125. Nov. 1969. *WR 139: 20*
[Ball State Univ., Muncie, Ind.]

Ling, John K. PELAGE AND MOLTING IN WILD MAMMALS WITH SPECIAL REFERENCE TO AQUATIC FORMS. *Quarterly Review Biol.* 45(1): 16-54, 1 fig. Mar. 1970. *WR 139: 20*
[Univ. Newfoundland, St. John's, Newfoundland, Canada.] Contents: Evolution, types and function of hair; Pelage development and cyclic growth; and Molting in wild mammals.

Reimov, R., and T. Nuratdinov. [SPECIFIC MORPHOLOGICAL AND ECOLOGICAL FEATURES OF JACKAL *(CANIS AUREUS)* AND JUNGLE CAT *(FELIS CHAUS)* IN THE LOWER AMUDARJA FLOW.] *Zool. Zhur.* 49(2): 268-274, illus. 1970. [From Biol. Abstr. 51(15), 1970. In Russian with English summ.] *WR 139: 20*

Roben, Peter. EIN FUER EUROPAEISCHE KLEINSAEUGER NEUES HAARWECHSELSCHEMA. ZUR GATTUNG *APODEMUS* IM RHEIN-NECKAR-GEBIET. [A MOULTING SCHEME NEW FOR SMALL EUROPEAN MAMMALS. THE SPECIES *APODEMUS* IN THE RHEIN-NECKAR REGION.] *Säugetierk. Mitteil.* 17(1): 31-42. 1969. [From Biol. Abstr. 51(7), 1970. In German with English summ.] *WR 139: 20*
[8011 Forstinning, Munich, Germany.]

MAMMALS--GENERAL--Continued

Roth, Harald H. UEBER DAS SCHWIMMEN AFRIKANISCHER LANDSAEUGETIERE IM KARIBA-STAUSEEGEBIET UND IHR VERHALTEN GEGENUEBER DEM FLUTWASSER. [ON THE SWIMMING OF AFRICAN TERRESTRIAL MAMMALS IN THE KARIBA RESERVOIR AREA AND THEIR BEHAVIOR TOWARD THE FLOOD WATERS.] *Zool. Garten* 37(1-3): 12-29, illus. 1969. [From Biol. Abstr. 51(12), 1970. In German with English summ.] *WR 139: 21*

MAMMALS--TECHNIQUES

Adorjan, A. S., and G. B. Kolenosky. A MANUAL FOR THE IDENTIFICATION OF HAIRS OF SELECTED ONTARIO MAMMALS. *Ontario Dept. Lands & Forests Res. Rept. (Wildl.)* no. 90. ii + 64 p., illus. Sept. 1969. *WR 139: 21*

Abstract: A system for rapidly identifying hair specimens by means of negative impressions of their cuticular scale patterns is outlined and discussed. A series of photomicrographs depicting the scale structure of hairs from 50 species of mammals is presented. These facilitate identification by permitting a direct visual comparison with the imprinted pattern of an unknown hair specimen. Comments on distinguishing features that may be useful for macroscopic recognition of hairs from the various species are also included.

Andrzejewski, Roman, and Teresa Wierzbowska. ESTIMATE OF THE NUMBER OF TRAPS VISITED BY SMALL MAMMALS BASED ON A PROBABILISTIC MODEL. *Acta Theriologica* 15 (1): 1-14, 3 figs. 1969. In English with Polish summ. *WR 139: 21*

[Inst. Ecol., Polish Acad. Sci., Nowy Świat, Warsaw, Poland.]

Child, G., P. Smith, and W. Von Richter. TSETSE CONTROL HUNTING AS A MEASURE OF LARGE MAMMAL POPULATION TRENDS IN THE OKAVANGO DELTA, BOTSWANA. *Mammalia* 34 (1): 34-75, 15 figs. Mar. 1970. In English with French summ. *WR 139: 21*

[Dept. Wildl. & Natl. Parks, Botswana.] Returns from tsetse control hunting provide a sound basis for interpreting broad population trends, in conjunction with evidence from the skulls of animals shot and the general history of numerical trends in the populations in surrounding areas. The analysis of the returns also provides information on the distribution, seasonal movement patterns and reproduction in several species in this zoogeographically important, but poorly known region. It is concluded that the hunting program was not achieving its objectives and that several species were maintaining themselves or increasing in the effective area hunted and that these trends were in general, in accordance with those in surrounding areas.--From summ.

McCullough, Dale R., Charles E. Olson, Jr., and Leland M. Queal. PROGRESS IN LARGE ANIMAL CENSUS BY THERMAL MAPPING. In: (Johnson, Philip, editor. *Remote Sensing in Ecology.*) *Univ. Ga. Press* (Athens). p. 138-147, 2 figs. 1969. *WR 139: 21*

A successful count of the George Reserve white-tailed deer herd demonstrated the feasibility of censusing large animals with infrared scanners. Hardware filtered to 8 to 14μ is most appropriate for detecting warm-blooded animals. Scanners filtered to 3.5 to 5.5 and 3.5 to 14μ failed to detect deer. Application of the technique is possible in open habitat, or deciduous woody vegetation without leaves.--From summ.

Nouvel, J., G. Chauvier, and L. Strazielle. EFFETS DE QUELQUES TRANQUILLISANTS ET ANESTHESIQUES SUR LES ANIMAUX SAUVAGES. [The EFFECTS OF SOME TRANQUILIZERS AND OF ANESTHETICS ON WILD ANIMALS.] *Zool. Garten* 37(1-3): 114-116. 1969. [From Biol. Abstr. 51(12), 1970. In French.] *WR 139: 21*

MAMMALS--FAUNAS & MANUALS

Golley, Frank B. SOUTH CAROLINA MAMMALS. *Contrib. Charleston Mus.* XV (Charleston, S.C.). xvi + 181 p., 90 figs., 6 x 9.25 in. 1966. *WR 139: 21*

An introductory chapter on the history, geography changes and practical significance of South Carolina mammals, and a chapter on the study of mammals precede

the accounts of the species of the 18-19 orders of mammals found in South Carolina. In this chapter there are keys to orders, families and species. The species accounts include identification, distribution (including maps) and biology of the species considered. Measurement data are tabulated in an appendix.

Hoffmeister, Donald F., and Steven W. Carothers. MAMMALS OF FLAGSTAFF, ARIZONA. *Plateau* 41(4): 184-188, 1 fig. Spring 1969. *WR 139: 22*
Fifty-six species are found within a 15-mile radius of Flagstaff. The checklist includes four extirpated and one introduced species.

Ingles, Lloyd G. MAMMALS OF THE PACIFIC STATES / CALIFORNIA, OREGON, AND WASHINGTON. *Stanford Univ. Press* (Stanford, Calif.). xii + 506 p., 259 figs., 105 maps + numerous illustrations in text and appendix, 6.25 x 9.25 in. 1965. Price $10.00. *WR 139: 22*
"Part I deals with morphology, classification, ecology, and geology. Part II gives brief descriptions of the various species, supplemented by dichotomous keys and pictorial keys, range maps, drawings, and photographs. The photographs were taken at close range in order to show external diagnostic characteristics. In discussions of several of the taxa the author has included accounts of recent research in physiological and behavioral adaptations. Appendixes deal with the collection and preparation of skins, skulls, and bacula; the identification of scats; the pronunciation of generic names; and principles of zoological classification."

Murray, Barbara M., and David F. Murray. NOTES ON MAMMALS IN ALPINE AREAS OF THE NORTHERN ST. ELIAS MOUNTAINS, YUKON TERRITORY AND ALASKA. *Canadian Field-Naturalist* 83(4): 331-338, 3 figs. Oct.-Dec. 1969. *WR 139: 22*
[Univ. Alaska, College.] Annotated list.

Stock, A. Dean. NOTES ON MAMMALS OF SOUTHWESTERN UTAH. *J. Mammal.* 51(2): 429-433. May 1970. *WR 139: 22*
[Univ. Okla., Norman.]

Van Peenen, P. F. D., M. L. Cunningham, and J. F. Duncan. A COLLECTION OF MAMMALS FROM CON SON ISLAND, VIETNAM. *J. Mammal.* 51(2): 419-424, 1 fig. May 1970. *WR 139: 22*
[Natl. Naval Med. Center, Bethesda, Md.]

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Barbehenn, Kyle R. RESPONSES OF RODENTS AND SHREWS TO PATTERNS OF REMOVAL TRAPPING. *Indian Rodent Symposium 8-11 Dec. 1966* (Calcutta). p. 247-252, 1 fig. 1969. *WR 139: 22*
[Washington Univ., St. Louis, Mo.]

Hansson, Lennart. SPRING POPULATIONS OF SMALL MAMMALS IN CENTRAL SWEDISH LAPLAND IN 1964-68. *Oikos* 20(2): 431-450, illus. 1969. [From Biol. Abstr. 51 (9), 1970. With Russian summ.] *WR 139: 22*
[Univ. Lund, Lund, Sweden.]

Ochirov, Yu. D. [THE DISTRIBUTION AND POPULATION SIZE OF SOME MAMMALS OF THE NORTHERN REGIONS OF CHITA OBLAST.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 69-74. 1968. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 81488. Transl. of Russian abstr.] *WR 139: 22*

Shure, Donald J. ECOLOGICAL RELATIONSHIPS OF SMALL MAMMALS IN A NEW JERSEY BARRIER BEACH HABITAT. *J. Mammal.* 51(2): 267-278, 3 figs. May 1970. *WR 139: 22*
[Emory Univ., Atlanta, Ga.] Abstract: Studies were conducted at Island Beach State Park, New Jersey, to determine the distributional patterns and movements of small mammals in a barrier beach habitat. Species captured were *Peromyscus*

leucopus, Microtus pennsylvanicus, Zapus hudsonius, Mus musculus, and *Sorex cinereus.* Most barrier beach communities contained a greater abundance of small mammals than reported from the New Jersey mainland. The distribution of small mammals at Island Beach was related to the topographically controlled pattern of environment and vegetation. Few mice foraged in the sparse cover of the highest dune zone elevations. *Peromyscus leucopus* occupied the thicket and woodland habitats of the more protected dune areas while *Microtus pennsylvanicus* dominated those hydric bayshore habitats containing dense herbaceous cover. Both habitat orientation and interspecific interactions may be involved in the distributional pattern of *M. pennsylvanicus* and *P. leucopus.* Succession in dune zone locations results in an increased abundance of *P. leucopus* as shrub cover increased during seral stages. Recapture distances of *P. leucopus* were inversely related to both population size and density of shrub cover. *Zapus hudsonius,* which was associated with moist habitats of the barrier beach, had either large or unstable home ranges.

MAMMALS--PARASITES & DISEASES

Barbehenn, Kyle R. HOST-PARASITE RELATIONSHIPS AND SPECIES DIVERSITY IN MAMMALS: AN HYPOTHESIS. *Biotropica* 1(2): 29-35. 1969. *WR 139: 23*
[Washington Univ., St. Louis, Mo.]

Boddicker, Major L., and Ernest J. Hugghins. ROUNDWORMS AND TAPEWORMS IN WILD GAME ANIMALS OF SOUTH DAKOTA. *S. Dak. Farm & Home Res.* 20(3): 18-19. Summer 1969. *WR 139: 23*
[S. Dak. State Univ., Brookings.] Helminths of white-tailed deer, muledeer, pronghorn, elk, bighorn, mountain goat, and bison.

Brooks, Geo. F., and Thomas M. Buchanan. TULAREMIA IN THE UNITED STATES: EPIDEMIOLOGIC ASPECTS IN THE 1960'S AND FOLLOW-UP OF THE OUTBREAK OF TULAREMIA IN VERMONT. *J. Infectious Diseases* 121(3): 357-359, 3 figs. Mar. 1970. *WR 139: 23*
The majority of the 2,594 cases of tularemia reported during 1960-1968 were associated with the principal vectors of the disease, ticks and cottontail rabbits. Seventy-two cases in 1968-69 were associated with muskrats taken from three streams in Addison County, Vermont.

Keep, M. E. A CHECK LIST OF THE BLOOD PARASITES RECORDED FROM THE LARGER WILD MAMMALS IN ZULULAND. *Lammergeyer* 3(11): 54-57. Apr. 1970. *WR 139: 23*
[Natal Parks Board, Pietermaritzberg, South Africa.] An annotated checklist includes parasites from 19 animals.

Kolonin, G. V. [THE ROLE OF WILD ANIMALS IN THE CIRCULATION OF THE SIBERIAN ANTHRAX PATHOGEN.] *Zool. Zhur.* 48(12): 1852-1859. 1969. [From Biol. Abstr. 51(12), 1970. In Russian with English summ.] *WR 139: 23*
[Moscow State Univ., Moscow, USSR.]

Mamedov, M. M. [SPREAD OF ALVEOCOCCOSIS IN PEOPLE IN THE VILYUISK AND IN ANIMALS IN THE NIZHNE-KOLYMSK DISTRICTS OF THE YAKUTSK ASSR.] *Med. Parazitol. Parazit. Bolez.* 38(6): 697-700. 1969. [From Biol. Abstr. 51(13), 1970. In Russian with English summ.] *WR 139: 23*
[E. I. Marstinovskii Inst. Med. Parasitol. Trop. Med., Min. Health USSR, Moscow, USSR.] Polar foxes were positive--other animals tested were negative.

Misonne, Xavier. QUARANTE ANNEES DE LUTTE ANTIPESTEUSE AU CONGO. [FORTY YEARS OF ANTI-PLAGUE CONTROL IN THE CONGO.] *Ann. Soc. Belg. Med. Trop. Parasitol. Mycol.* 49(1): 1-16. 1969. [From Biol. Abstr. 41(6), 1970. In French.] *WR 139: 23*
[Inst. Roy. Sci. Nat. Belgium, Brussels, Belgium.] *"Rattus* and *Mastomys."*

Poland, Jack D., and Allan M. Barnes. CURRENT STATUS OF PLAGUE AND PLAGUE CONTROL IN THE UNITED STATES. *Proc. 4th Vertebrate Pest Conf.* p. 29-33. 1970. *WR 139: 24*
[Natl. Communicable Dis. Center, HEW, Fort Collins, Colo.] See Dana, *WR 139: 16.*

SHREWS, MOLES, BATS

Aleksandrova, I. V. [STOCKS AND HUNTING OF MOLES IN KALININ OBLAST.] *Sbornik Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Zhivotn. Syr'ya Pushniny* 23: 33-42. 1968. [From Biol. Abstr. 51(1), 1970, from Referat. Zhur., Biol., 1969, no. 61570. Transl. of Russian abstr.] *WR 139: 24*

Baer, George M., and Devil Bill Adams. RABIES IN INSECTIVOROUS BATS IN THE UNITED STATES, 1953-65. *Public Health Repts.* 85(7): 637-645, 2 figs. July 1970. *WR 139: 24*
[Natl. Communicable Disease Center, Lawrenceville, Ga.] Summary: Of the 1,869 rabid insectivorous bats reported from 47 states from 1953 through 1965, 65% were identified as to species. There was a notable concentration of rabid bats from May to October; 88.2% of rabid bats were reported during these months. Of the identified bats, 59% were recorded in 20 colonial species, and the remaining 41% in five free-living species. The species with the widest geographic distribution was the free-living hoary bats, *Lasiurus cinereus*; cases were reported by 24 states. There were more cases (223) of rabies in the free-living red bat, *Lasiurus borealis*, than in any other species. In the colonial Mexican freetail a comparatively low prevalence of rabies infection has been noted, together with a concurrent high prevalence of rabies antibody; violence is rare in this species. Violence has, however, been observed in three free-living species--the hoary bat, the red bat, and *Lasiurus intermedius floridanus*, the yellow bat.

Beauregard, M. BAT RABIES IN CANADA 1963-1967. *Canadian J. Comp. Med.* 33 (3): 220-226, illus. 1969. [From Biol. Abstr. 51(2), 1970. In English with French summ.] *WR 139: 24*
[Anim. Disease Res. Inst., Hull, Quebec, Canada.]

Bogan, Michael A., and Daniel F. Williams. ADDITIONAL RECORDS OF SOME CHIHUAHUAN BATS. *Southwestern Nat.* 15(1): 131-134. 1 June 1970. *WR 139: 24*
[Univ. N. Mex., Albuquerque.] *"Myotis lucifugus occultus, Myotis yumanensis, Myotis velifer, Eptesicus fuscus pallidus, Lasiurus borealis borealis, Lasiurus cinereus cinereus, Plecotus phyllotis, Antrozous pallidus pallidus,* and *Tadarida brasiliensis mexicana."*

Davis, William B. *TOMOPEAS RAVUS* MILLER (CHIROPTERA). *J. Mammal.* 51(2): 244-247, 2 figs. May 1970. *WR 139: 24*
[Texas A&M Univ., College Station.] Abstract: Roosting habits, individual variation, and distribution of the rare *Tomopeas ravus* Miller are discussed. This is a "crevice bat" and it roots under exfoliations of granite boulders and outcroppings in the desert regions of Perú.

Dwyer, P. D. POPULATION RANGES OF *MINIOPTERUS SCHREIBERSII* (CHIROPTERA) IN SOUTH-EASTERN AUSTRALIA. *Australian J. Zool.* 17(4): 665-686. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 24*
[Univ. Queensland, Brisbane, Queensland, Australia.]

Dwyer, P. D. LATITUDE AND BREEDING SEASON IN A POLYESTRUS SPECIES OF *MYOTIS*. *J. Mammal.* 51(2): 405-410, 3 figs. May 1970. *WR 139: 24*
[Univ. Queensland, Brisbane, Queensland, Australia.] *"Myotis adversus."*

Dwyer, P. D. SOCIAL ORGANIZATION IN THE BAT *MYOTIS ADVERSUS*. *Science* 168 (3934): 1006-1008. 22 May 1970. *WR 139: 25*
[Univ. Queensland, Brisbane, Australia.] Abstract: Studies in which the Australian bat *Myotis adversus* was marked and recaptured showed that mature males tend to be solitary, are strongly attached to a particular site, and apparently defend home sites. Harem formation concurrent with mating has been observed, and the bond between the mother and her young extends beyond nursing.

Greenhall, Arthur M. VAMPIRE BAT CONTROL: A REVIEW AND PROPOSED RESEARCH PROGRAMME FOR LATIN AMERICA. *Proc. 4th Vertebrate Pest Conf.* p. 41-54. 1970. *WR 139: 25*
[Smithsonian Inst., Mexico City, Mexico.] See Dana, *WR 139: 16*.

Grunwald, Alfons. UNTERSUCHUNGEN ZUR ORIENTIERUNG DER WEISSZAHNSPITZMAEUSE (SORICIDAE: CROCIDURINAE). [INVESTIGATION ON ORIENTATION IN WHITE-TOOTH-SHREWS (SORICIDAE: CROCIDURINAE).] *Z. Vergl. Physiol.* 65(2): 191-217, illus. 1969. [From Biol. Abstr. 51(9), 1970. In German with English summ.] *WR 139: 25*
[Univ. Tubingen, Tubingen, Germany.]

Haeck, J. COLONIZATION OF THE MOLE *(TALPA EUROPAEA* L.*)* IN THE IJSSELMEER POLDERS. *Netherlands J. Zool.* 19(2): 145-248, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 25*
[Inst. Ecol. Res., Arnhem, Netherlands.]

Hanak, Vladimir, and Jiri Gaisler. NOTES ON THE TAXONOMY AND ECOLOGY OF *MYOTIS LONGIPES* (DOBSON, 1873). *Zool. Listy* 18(3): 195-206, illus. 1969. [From Biol. Abstr. 51(6), 1970.] *WR 139: 25*
[Charles Univ., Prague, Czechoslovakia.]

Hoffmeister, Donald F. THE SEASONAL DISTRIBUTION OF BATS IN ARIZONA: A CASE FOR IMPROVING MAMMALIAN RANGE MAPS. *Southwestern Nat.* 15(1): 11-22, 32 figs. 1 June 1970. *WR 139: 25*
[Univ. Ill., Urbana.] Of the 28 spp. of bats that occur in Arizona, only 15 are present during winter. Of these, the ranges of 11 are greatly reduced.--From abstr.

Humphrey, Stephen R., and James B. Cope. POPULATION SAMPLES OF THE EVENING BAT, *NYCTICEIUS HUMERALIS*. *J. Mammal.* 51(2): 399-401. May 1970. *WR 139: 25*
[Okla. State Univ., Stillwater.]

Hyvärinen, Heikki. SEASONAL CHANGES IN THE ACTIVITY OF THE THYROID GLAND AND THE WINTERING PROBLEM OF THE COMMON SHREW *(SOREX ARANEUS* L.*)*. *Aquilo, Ser. Zool.* (8): 30-35, 3 figs. 1969. *WR 139: 25*
[Univ. Oulu, Oulu, Finland.]

Imaizumi, Yoshinoti, Mizuko Yoshiyuki, Iwao Obara, Kimiyuki Tsuchiya, and Tadaaki Imaizumi. SMALL MAMMALS OF MT. FUJI, JAPAN: I. MAMMAL COMMUNITIES AND "COMPETITION BY POWER" AS A FACTOR OF SEGREGATED DISTRIBUTION OF *UROTRICHUS* AND *DYMECODON*. *J. Mammal Soc. Japan* 4(3): 63-73, illus. 1969. [From Biol. Abstr. 51(12), 1970. In English with French summ.] *WR 139: 25*
"Insectivora."

Ivanter, E. V. [A CONTRIBUTION TO THE STUDY OF THE MOLE *(TALPA EUROPAEA EUROPAEA* L.*)* IN KARELIA.] *Uch. Zap. Petrozavodsk. Univ.* 16(3): 186-202. 1969. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 8I495. Transl. of Russian abstr.] *WR 139: 25*

Kock, Dieter. DIE FLEDERMAUS-FAUNA DES SUDAN (MAMMALIA, CHIROPTERA). [THE CHIROPTERAN FAUNA OF SUDAN (MAMMALIA, CHIROPTERA).] *Abh. Senckenberg. Naturforsch. Ges.* 521: 5-238. 1969. [From Biol. Abstr. 51(12), 1970. In German with English and French summ.] *WR 139: 25*
[Zool. Inst. Justus-Liebig-Univ., Giessen, Germany.]

Kuhn, Lee W. MOLE CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 71-76, 1 fig. 1970. *WR 139: 26*
[Oreg. State Univ., Corvallis.] See Dana, *WR 139: 16.*

Kydyraliev, A. K. [SHREWS (SORICIDAE) FROM THE MOUNTAIN RANGE TERSKEI-ALATAU (NORTH TYAN-SHAN).] *Zool. Zhur.* 48(8): 1256-1258. 1969. [From Biol. Abstr. 51 (6), 1970. In Russian with English summ.] *WR 139: 26*
[Acad. Sci. Kirg. SSR, Frunze, USSR.]

Lackey, James Alden. DISTRIBUTIONAL RECORDS OF BATS FROM VERACRUZ. *J. Mammal.* 51(2): 384-385. May 1970. *WR 139: 26*
[Univ. Mich., Ann Arbor.]

LaVal, Richard K. BANDING RETURNS AND ACTIVITY PERIODS OF SOME COSTA RICAN BATS. *Southwestern Nat.* 15(1): 1-10, 6 figs. 1 June 1970. *WR 139: 26*
[Texas A&M Univ., College Station.] Two rows of mist nets were maintained for six successive nights in two contrasting environmental situations--Tropical Dry Forest and Tropical Wet Forest. About 10% of the bats banded were subsequently recaptured. Times of capture were recorded and used to plot activity curves for eight species. Some species of phyllostomid bats are active primarily in the early hours after dusk whereas others are active all night.--From abstr.

Martinsen, David L. ENERGETICS AND ACTIVITY PATTERNS OF SHORT-TAILED SHREWS *(BLARINA)* ON RESTRICTED DIETS. *Ecology* 50(3): 505-510, 3 figs. Late Spring 1969. *WR 139: 26*
[Elmhurst Coll., Elmhurst, Ill.] The factors most important to success of *Blarina* in a temperate climate is its proclivity to eat almost anything of energy value and an activity pattern in which most of the time is spent at rest.--From summ. Courtesy/ Paul A. Stewart.

Olert, Juergen. FELLZEICHNUNG UND GROESSE RHEINISCHER WALDSPITZMAUSE *(SOREX ARANEUS)* (MAMM.-INSECTIVORA). [SKIN MARKING AND SIZE OF THE WOOD-SHREW *(SOREX ARANEUS)* (MAMMALIA-INSECTIVORA).] *Decheniana* 122(1): 123-127, illus. 1969. [From Biol. Abstr. 51(12), 1970. In German.] *WR 139: 26*
[Stud. Rer. Nat. Juergen, Verweyenstr. 20, Bonn, Germany.]

Pasanen, Seppo. ON THE SEASONAL VARIATION OF THE WEIGHT AND OF THE ALKALINE PHOSPHATASE ACTIVITY OF THE BROWN FAT IN THE COMMON SHREW *(SOREX ARANEUS* L.). *Aquilo, Ser. Zool.* (8): 36-43, 4 figs. 1969. *WR 139: 26*
[Univ. Oulu, Oulu, Finland.]

Pattie, Donald L. BEHAVIOR OF CAPTIVE MARSH SHREWS *(SOREX BENDIRII). Murrelet* 50(3): 27-32, 1 fig. Sept.-Dec. 1969. *WR 139: 26*
[Pacific Lutheran Univ., Takoma, Wash.] The three shrews would readily accept live prey underwater or in their cage. Soft-bodied arthropods, night crawlers, and canned dog food were eaten; a 2" goldfish was pursued and killed, but not eaten.

Peracchi, A. L. SOBRE OS HABITOS DE *HISTIOTUS VELATUS* (GEOFFROY, 1824) (CHIROPTERA, VESPERTILIONIDAE). [ON THE HABITS OF *HISTIOTUS VELATUS* (GEOFFROY, 1824) (CHIROPTERA, VESPERTILIONIDAE).] *Rev. Brasil Biol.* 28(4): 469-473, illus. 1968. [From Biol. Abstr. 51(11), 1970. In Portuguese with English summ.] *WR 139: 26*
[Univ. Fed. Rur., Rio de Janeiro, Brazil.]

Pirlot, Paul, and Heinz Stephan. ENCEPHALIZATION IN CHIROPTERA. *Canadian J. Zool.* 48(3): 433-444, 3 figs. May 1970. *WR 139: 26*
[Univ. Montreal, Montreal, Quebec, Canada.] The brain weights of 51 species of Chiroptera belonging to 10 families were compared using the allometry formula and based on the brain weights of some of the most primitive recent Insectivores. Estimates for the degree of encephalization of the various systematic and dietary groups of bats were given in the form of progression indices. A certain amount of between-group overlap was observed.--From abstr.

SHREWS, MOLES, BATS--Continued

Puchkovskii, S. V. [MOBILITY AND STRUCTURE OF THE POPULATION OF SHREWS (INSECTIVORA, SORICIDAE) IN THE TAIGA OF THE ONEGA PENINSULA.] *Zool. Zhur.* 48(1): 1544-1551. 1969. [From Biol. Abstr. 51(9), 1970. In Russian with English summ.] *WR 139: 27*
[V. I. Lenin Moscow State Pedagog. Inst., Moscow, USSR.]

Purchase, D. FIFTH ANNUAL REPORT ON BAT-BANDING IN AUSTRALIA. *Aust. CSIRO Div. Wildl. Res. Tech. Pap.* 15: 3-14. 1969. [From Biol. Abstr. 51(13), 1970.] *WR 139: 27*
[CSIRO, Canberra, Australia.]

Rempe, Udo, and Paul Buhler. ZUM EINFLUSS DER GEOGRAPHISCHEN UND ALTERS-BEDINGTEN VARIABILITAT BEI DER BESTIMMUNG VON *NEOMYS*-MANDIBELN MIT HILFE DER DISKRIMINANZANALYSE. [ON THE EFFECT OF GEOGRAPHIC AND AGE DEPENDENT VARIABILITY IN THE DETERMINATION OF *NEOMYS* MANDIBLES USING DISCRIMINANT ANALYSIS.] *Z. Säugetierk.* 34(3): 148-164, illus. 1969. [From Biol. Abstr. 51(13), 1970. In German with English summ.] *WR 139: 27*
[Christ.-Albrecht-Univ., Kiel, Germany.]

Studier, Eugene H., John W. Procter, and D. J. Howell. DIURNAL BODY WEIGHT LOSS AND TOLERANCE OF WEIGHT LOSS IN FIVE SPECIES OF *MYOTIS*. *J. Mammal.* 51(2): 302-309, 3 figs. May 1970. *WR 139: 27*
[N. Mex. Highlands Univ., Las Vegas.] Abstract: Dawn to dusk weight loss of *Myotis leibii* and *M. yumanensis*, caged singly, and *M. lucifugus*, *M. thysanodes*, and *M. velifer*, caged singly and in groups of four, was determined in their natural roosting environments. Individual weight losses ranged from 6.4 to 21.9% of initial body weight, whereas weight loss of grouped bats ranged from 9.9 to 16.2%. Roosting conditions, temperature and relative humidity, are reflected in daily weight loss. Grouped *M. thysanodes* lost significantly less weight than individually caged bats. There was no difference in weight loss of individual and grouped *M. lucifugus* and *M. velifer*. Weight loss at which half of the individuals of each species except *M. leibii* died ranged from 22.8 to 32.3% of initial body weight.

RABBITS & PIKAS

Evans, James, Paul L. Hegdal, and Richard E. Griffith, Jr. METHODS OF CONTROLLING JACKRABBITS. *Proc. 4th Vertebrate Pest Conf.* p. 109-116. 1970. *WR 139: 27*
[Bur. Sport Fisheries & Wildl., Twin Falls, Idaho.] See Dana, *WR 139: 16*.

Gruzdev, V. V. [SETTLEMENT OF THE EUROPEAN HARE TO THE EAST.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(6): 19-29. 1969. [From Biol. Abstr. 51(11), 1970. In Russian with English summ.] *WR 139: 27*

Guzhevnikov, I. A., and N. S. Tarasov. [EXPERIENCE IN CONTROLLING THE DAURIAN PIKA.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 413-427. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I564. Transl. of Russian abstr.] *WR 139: 27*

Holler, Nicholas R., and Halsey M. Marsden. ONSET OF EVENING ACTIVITY OF SWAMP RABBITS AND COTTONTAILS IN RELATION TO SUNSET. *J. Wildl. Mgmt.* 34(2): 349-353, 4 figs. Apr. 1970. *WR 139: 27*
[Univ. Mo., Columbia.] Abstract: Onset of evening activity was recorded for ten swamp rabbits *(Sylvilagus aquaticus)* (1967 breeding season) and 22 cottontails *(S. floridanus)* (1960-1962 breeding seasons) confined in 1.8-2-acre enclosures. As sunset was delayed toward spring, the onset of activity of individual swamp rabbits was delayed. The delay was greater for females and the lowest-ranking male than for the reproductively active males. The still later sunsets of late spring and summer were not accompanied by a further delay in onset of evening activity, and time of onset became highly variable but occurred well before

sunset. Cottontail data indicated a pattern similar to that of swamp rabbits. Onset of activity for both species occurred during the twilight period following sunset in late winter and early spring but well before sunset in late spring and summer.

Kir'yanov, G. I., and A. E. Lavrinenko. [METHODS FOR CONTROLLING THE PIKA IN THE MOUNTAIN ALTAI.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 393-396. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I565. Transl. of Russian abstr.] *WR 139: 28*

Legler, Randall Phar, Jr. HABITAT PREFERENCE OF THE DESERT COTTONTAIL WITH ADDITIONAL NOTES ON THE BLACK-TAILED JACK RABBIT. *M.S. thesis, N. Mex. State Univ.* iii + 26 p. 1970. *WR 139: 28*
Preferences for two shrub habitats were compared, one relatively open at ground level, the other with denser ground vegetation. The cottontail was found to prefer habitat with denser cover of low-hanging, spreading shrubs. The jack rabbit utilized both habitats, but showed a preference for the denser shrub habitat.--From abstr. Courtesy/ Charles A. Davis.

L'vov, I. A. [ECOLOGY OF THE EUROPEAN HARE IN TRANSFORMED LANDSCAPES OF THE UKRAINE.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(6): 30-36, illus. 1969. [From Biol. Abstr. 51(11), 1970. In Russian with English summ.] *WR 139: 28*
"Lepus europaeus."

McKinney, Ted D. BEHAVIORAL INTERACTIONS IN GROUPED MALE COTTONTAILS. *J. Mammal.* 51(2): 402-403. May 1970. *WR 139: 28*
[Albert Einstein Med. Center, Philadelphia, Pa.]

McKinney, Ted D., and Roy L. Kirkpatrick. BRAIN WEIGHT AND ACETYLCHOLINE-STERASE ACTIVITY IN DIFFERENTIALLY-GROUPED COTTONTAIL RABBITS. *J. Mammal.* 51 (2): 389-391. May 1970. *WR 139: 28*
[Albert Einstein Med. Center, Philadelphia, Pa.] *"Sylvilagus floridanus."*

Mykytowycz, R., and S. Gambale. THE DISTRIBUTION OF DUNG-HILLS AND THE BEHAVIOR OF FREE-LIVING WILD RABBITS, *ORYCTOLAGUS CUNICULUS* (L.), ON THEM. *Forma Functio* 4: 333-349, illus. 1969. [From Biol. Abstr. 51(11), 1970. In English with German and French summ.] *WR 139: 28*
[P.O. Box 109, Canberra, Australia.]

Pilarska, J. INDIVIDUAL GROWTH CURVE AND FOOD CONSUMPTION BY EUROPEAN HARE *(LEPUS EUROPAEUS* PALLAS 1778*)* IN LABORATORY CONDITIONS. *Bull. Acad. Pol. Sci. Ser. Sci. Biol.* 17(5): 299-305, illus. 1969. [From Biol. Abstr. 51(6), 1970.] *WR 139: 28*
[Univ. Warsaw, Poland.]

Solomatin, A. O. [EUROPEAN HARE ON THE TURGAISK PLATEAU.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(6): 5-18, illus. 1969. [From Biol. Abstr. 51 (11), 1970. In Russian with English summ.] *WR 139: 28*
"Lepus europaeus caspicus."

Tomlinson, A. R., and C. D. Gooding. THE ORGANISATION OF RABBIT CONTROL *(ORYCTOLAGUS CUNICULUS)* IN WESTERN AUSTRALIA. *Proc. 4th Vertebrate Pest Conf.* p. 188-195. 1970. *WR 139: 28*
[Agr. Protection Board, South Perth, Western Australia.] See Dana, *WR 139: 16.*

RODENTS--MISCELLANEOUS

Abbott, Herschel G., and Thomas F. Quink. ECOLOGY OF EASTERN WHITE PINE SEED CACHES MADE BY SMALL FOREST MAMMALS. *Ecology* 51(2): 271-278, 3 figs. Early Spring 1970. *WR 139: 28*
[Univ. Mass., Amherst.] White-footed mice *(Peromyscus leucopus)* and red-backed

voles *(Clethrionomys gapperi)* cache pine seeds in situations favorable for germination of the seeds; but, except in years of excessively heavy crops, the mice and voles utilize all the caches and thus do not ordinarily aid in pine regeneration.--Courtesy/ Paul A. Stewart.

Barlow, Jon C. OBSERVATIONS ON THE BIOLOGY OF RODENTS IN URUGUAY. *Roy. Ont. Mus. Life Sci. Contrib.* 75: 1-59, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 29*
[Roy. Ont. Mus., Toronto, Ontario, Canada.]

Barnes, Victor G., Jr., Paul Martin, and Howard P. Tietjen. POCKET GOPHER CONTROL ON OREGON PONDEROSA PINE PLANTATIONS. *J. Forestry* 68(7): 433-435, 2 figs. July 1970. *WR 139: 29*
[Bur. Sport Fisheries & Wildl., Olympia, Wash.] Abstract: Following a series of laboratory bioassays, control of pocket gophers *(Thomomys talpoides quadratus)* was evaluated on two ponderosa pine *(Pinus ponderosa)* plantations in Oregon. The forest-land burrow-builder (a bait-dispensing machine) operated satisfactorily in difficult terrain and better than 90% control was attained with baits of strychnine alkaloid and Gophacide *(O, O-bis* [p-chlorophenyl] acetimodoylphosphoramidothioate*)*.

Belyaev, V. G., and V. V. Barkovskaya. [THE PROBLEM OF THE FORMATION OF THE RODENT FAUNA OF INHABITED POINTS IN MAGADAN OBLAST.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 38-41. 1968. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 81489. Transl. of Russian abstr.] *WR 139: 29*

Belyaev, V. G., and V. F. Shamurin. [INFORMATION ON THE ECOLOGY OF THE LEMMINGS OF WRANGEL ISLAND.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 42-59. 1968. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 10I534. Transl. of Russian abstr.] *WR 139: 29*

Belyaeva, N. S., and P. V. Abushkevich. [ISOLATION OF THE PATHOGENS OF TULAREMIA FROM RED-GREY VOLES AND GAMASID MITES IN SOUTHERN SAKHALIN.] *Med. Parazitol. Parazit. Bolez.* 38(5): 618-620. 1969. [From Biol. Abstr. 51(7), 1970. In Russian with English summ.] *WR 139: 29*

Birney, Elmer C., and S. Lawrence Twomey. EFFECTS OF SODIUM CHLORIDE ON WATER CONSUMPTION, WEIGHT, AND SURVIVAL IN THE WOODRATS, *NEOTOMA MICROPUS* AND *NEOTOMA FLORIDANA*. *J. Mammal.* 51(2): 372-375, 2 figs. May 1970. *WR 139: 29*
[Univ. Kans., Lawrence.] "It appears that *N. floridana* can survive actual or physiological drought better than *N. micropus* and that the advantage results from differences in food habits between the two species in winter."

Bogush, A. A. [EXPERIENCE IN RAT EXTERMINATION ON ANIMAL FARMS.] *Trudy Belorus. Nauch.-Issled. Vet. Inst.* 6: 279-285. 1967. [From Biol. Abstr. 51 (3), 1970, from Referat. Zhur., Biol., 1968, no. 10I628. Transl. of Russian abstr.] *WR 139: 29*
Studies were made of the possibility of using zoocoremarin, ratindare, typhus bacteria, and combinations of these preparations for rodent control.--From abstr.

Boice, Robert, and Janet G. Arledge. WATER REQUIREMENTS OF GERBILS AND KANGAROO RATS IN THE LABORATORY. *Psychol. Rept.* 23(3, pt. 2): 1063-1069. 1968. [From Biol. Abstr. 51(1), 1970.] *WR 139: 29*
[Ohio Univ., Athens.] *"Meriones unguiculates* and *Dipodomys ordii."*

Brown, Robert Z. RODENT CONTROL PROBLEMS IN DEVELOPING COUNTRIES. *Proc. 4th Vertebrate Pest Conf.* p. 140-143. 1970. *WR 139: 29*
[Rockefeller Foundation, New York, N.Y.] See Dana, *WR 139: 16.*

Buchalczyk, Anna. REPRODUCTION, MORTALITY AND LONGEVITY OF THE BANK VOLE UNDER LABORATORY CONDITIONS. *Acta Theriologica* 15(10): 153-176, 7 figs. 1970. In English with Polish summ. *WR 139: 30*
[Polish Acad. Sci., Białowieża, Poland.]

Canutt, Paul R. POCKET GOPHER PROBLEMS AND CONTROL PRACTICES ON NATIONAL FOREST LANDS IN THE PACIFIC NORTHWEST REGION. *Proc. 4th Vertebrate Pest Conf.* p. 120-125, 1 fig. 1970. *WR 139: 30*
[U.S. Forest Serv., Portland, Oreg.] See Dana, *WR 139: 16.*

Cheĺkowska, Henryka. NUMBERS OF SMALL RODENTS IN FIVE PLANT ASSOCIATIONS. *Ekologia Polska--Ser. A* 17(43): 847-854, 3 figs. 1969. In English with Polish summ. *WR 139: 30*
[Inst. Ekol. PAN, Warsaw, Poland.] *"Clethrionomys glareolus, Apodemus agrarius,* and *A. flavicollis."*

Chipanii, V. I. [THE DISTRIBUTION BY STATIONS OF FOREST VOLES IN NATURAL FOCI OF INFECTION IN THE AMUR FORELAND.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 100-108. 1968. [From Biol. Abstr. 51(8), 1970. In Russian.] *WR 139: 30*

Colvin, Margaret A., and Dallas V. Colvin. BREEDING AND FECUNDITY OF SIX SPECIES OF VOLES *(MICROTUS). J. Mammal.* 51(2): 417-419. May 1970. *WR 139: 30*
[Univ. Colo., Boulder.]

Cornwell, P. B. STUDIES IN MICROENCAPSULATION OF RODENTICIDES. *Proc. 4th Vertebrate Pest Conf.* p. 83-97, 13 figs. 1970. *WR 139: 30*
[Rentokil Laboratories Ltd., Felcourt, E. Grinstead, Sussex, England.] See Dana, *WR 139: 16.*

Crawley, M. C. MOVEMENTS AND HOME-RANGES OF *CLETHRIONOMYS GLAREOLUS* SCHREBER AND *APODEMUS SYLVATICUS* L. IN NORTH-EAST ENGLAND. *Oikos* 20(2): 310-319, illus. 1969. [From Biol. Abstr. 51(9), 1970. In English with Russian summ.] *WR 139: 30*
[Univ. Durham, Durham, England.]

Crichton, Elizabeth G. REPRODUCTION IN THE PSEUDOMYINE RODENT *MESEMBRIOMYS GOULDII* (GRAY) (MURIDAE). *Australian J. Zool.* 17(5): 785-797, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 30*
[Univ. Queensland, St. Lucia, Queensland, Australia.]

Dodge, Wendell E., and Paul R. Canutt. A REVIEW OF THE STATUS OF THE PORCUPINE *(ERETHIZON DORSATUM EPIXANTHUM)* IN WESTERN OREGON. *Bur. Sport Fisheries & Wildl.* and *U.S. Forest Serv.* 24 p., 13 figs. 1969. *WR 139: 30*
[Bur. Sport Fisheries & Wildl., Olympia, Wash.] Porcupine damage to conifer stands is highest in Josephine, Jackson, and Douglas counties, Washington. Forests in Lane, Linn, and Clackamas counties also showed significant damage. Ponderosa pine received the greatest amount of damage with Douglas-fir reported to be second.

Erkinaro, Eino. DER PHASENWECHSEL DER LOKOMOTORISCHEN AKTIVITÄT BEI *MICROTUS AGRESTIS* (L.), *M. ARVALIS* (PALL.) UND *M. OECONOMUS* (PALL.). [VARIATION (SEASONAL AND DIURNAL) IN LOCOMOTOR ACTIVITY OF *MICROTUS AGRESTIS, M. ARVALIS,* AND *M. OECONOMUS.*] *Aquilo, Ser. Zool.* (8): 1-29, 17 figs. 1969. In German. *WR 139: 30*

Fain, A., A. J. Munting, and F. Lukoschus. LES MYOCOPTIDAE PARASITES DES RONGEURS EN HOLLANDE ET EN BELGIQUE (ACARINA: SARCOPTIFORMES). [MYOCOPTIC PARASITES OF RODENTS IN HOLLAND AND BELGIUM (ACARINA: SARCOPTIFORMES).] *Acta Zool. & Pathol. Antverpiensia* no. 50. p. 67-172, 80 figs. Jan. 1970. In French. *WR 139: 30*
[Inst. Méd. Tropicale Prince Léopold, Antwerp, Belgium.]

Fleming, Theodore H. COMPARATIVE BIOLOGY OF TWO TEMPERATE-TROPICAL RODENT COUNTERPARTS. *Am. Midland Nat.* 83(2): 462-471. Apr. 1970. *WR 139: 31*
[Univ. Mo.-St. Louis, St. Louis.] *"Peromyscus leucopus* and *Oryzomys capito."*

Gebczyńska, Zofia. BIOENERGETICS OF A ROOT VOLE POPULATION. *Acta Theriologica* 15(3): 33-66, 5 figs. 1970. In English with Polish summ. *WR 139: 31*
[Mammals Res. Inst., Polish Acad. Sci., Białowieża, Poland.] On account of the high population numbers the value of energy flow over the course of the year is considerable, and is about 375,000 kcal/hectare. Nevertheless this constitutes only a negligible part (about 3.1%) of net production assessed as 11,929,864.7 kcal/ha per year. The abundance of the food supply for this vole greatly exceeds its requirements over the whole year. Despite the fact that this species does not cause visible damage in an association of annual plants, it is a serious pest of young trees, although gnawed bark forms only a supplement to its basic diet.--From abstr.

Getz, Lowell L. HABITAT OF THE MEADOW VOLE DURING A "POPULATION LOW". *Am. Midland Nat.* 83(2): 455-461. Apr. 1970. *WR 139: 31*
[Univ. Ill., Urbana.] Abstract: During a population low in the spring of 1968 many populations of the meadow vole in southern Wisconsin were localized in small wet marshes. Adjacent drier sites with dense vegetation were not occupied. By late July and August the voles had dispersed into the surrounding drier sites. Comparisons were made of several environmental factors (soil moisture and temperature, surface air temperatures and humidities, amount of vegetation cover, and moisture content of the vegetation) in the utilized and unutilized sites. None differed enough to place a significant physiological stress on voles attempting to live in the drier sites. Restriction of the meadow vole to low wet areas during population lows does not appear related to physiological stress.

Ghiselin, Jon. EDAPHIC CONTROL OF HABITAT SELECTION BY KANGAROO MICE *(MICRODIPODOPS)* IN THREE NEVADAN POPULATIONS. *Oecologia* 4: 248-261, 1 fig. 1970. *WR 139: 31*
[Point Park Coll., Pittsburgh, Pa.] Although the distribution of *M. pallidus* was shown to be random with regard to soil type, *M. megacephalus* was captured almost exclusively on gravel. Comparison of the species using pooled data showed a highly significant difference ($p=0.001$) in the types of soil on which they were captured. Theoretical implications of the study are discussed.--From abstr.

Gladkina, T. S., and T. M. Mokeeva. [SPECIFIC REACTION FEATURES OF GEOGRAPHIC FORMS OF THE NARROW-SKULLED VOLE TO DROUGHT.] *Zool. Zhur.* 48(8): 1227-1242, illus. 1969. [From Biol. Abstr. 51(5), 1970. In Russian with English summ.] *WR 139: 31*
[All-Union Res. Inst. Plant Prot., Leningrad, USSR.]

Gliwicz, Joanna. RELATION BETWEEN TRAPPABILITY AND AGE OF INDIVIDUALS IN A POPULATION OF THE BANK VOLE. *Acta Theriologica* 15(2): 15-32, 4 figs. 1970. In English with Polish summ. *WR 139: 31*
[Inst. Ecol., Polish Acad. Sci., Nowy Świat, Warsaw, Poland.] A discussion is given of the factors affecting the trappability of a population of complicated age structure, with particular emphasis on the role of the social structure. --From abstr.

Grant, P. R. COLONIZATION OF ISLANDS BY ECOLOGICALLY DISSIMILAR SPECIES OF MAMMALS. *Canadian J. Zool.* 48(3): 545-553. May 1970. *WR 139: 31*
[McGill Univ., Montreal, Quebec, Canada.] Abstract: A theory of competitive interaction predicts that ecologically dissimilar species of animals within a taxon occur together on islands more frequently than do ecologically similar species. The theory was tested with rodents of the genera *Microtus, Clethrionomys, Peromyscus,* and *Apodemus.* Based upon information derived from mainland studies, the prediction was made that *Microtus* and *Clethrionomys*, deemed to be the most similar pair ecologically, occur together on islands rarely. Data

from three groups of islands showed the prediction to be correct. These two genera do not occur together on any of the islands examined which support only two genera. Other factors which might govern the observed distributions, including the dispersal abilities of the genera, are discussed. It is suggested that there is a trend in the occupation of islands from ecological generalists to specialists.

Guzhevnikov, I. A. [EXPERIENCE IN CONTROLLING BRANDT'S VOLE WITH A MIXTURE OF CALCIUM AND SODIUM CYANIDE.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 410-412. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I563. Transl. of Russian abstr.] *WR 139: 32*

Hammer, E. Wayne, and Chris Maser. THE USE OF COW CHIPS BY THE SAGEBRUSH VOLE *(LAGURUS CURTATUS)*. *Murrelet* 50(3): 35-36, 1 fig. Sept.-Oct. 1969. *WR 139: 32*
[Culver, Oreg.] *L. curtatus* hollow out cow chips by digging and/or eating the fecal material. The chips serve as feeding stations, and probably provide protection from aerial predators. None were found being used for nesting.

Harrison, David L., and C. J. Seton-Browne. THE INFLUENCE OF SOIL COLOR ON SUBSPECIATION OF MAMMALS IN EASTERN ARABIA. *Zool. J. Linn. Soc.* 48(4): 467-470, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 32*
[Bowerwood House, Sevenoaks, Kent, England.] *"Gerbillus nanus."*

Howard, Walter E., and Rex E. Marsh. OLFACTION IN RODENT CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 64-70. 1970. *WR 139: 32*
[Univ. Calif., Davis.] See Dana, *WR 139: 16*.

Howard, Walter E., Rex E. Marsh, and Ronald E. Cole. A DIPHACINONE BAIT FOR DEER MOUSE CONTROL. *J. Forestry* 68(4): 220-222. Apr. 1970. *WR 139: 32*
[Univ. Calif., Davis.] Abstract: Deer mice *(Peromyscus maniculatus)* were found susceptible to diphacinone, an anticoagulant rodenticide. Consumption of 0.01-percent-diphacinone-treated crimped oat-groat bait for a minimum of 3 days was fatal to 80% of the mice, with longer exposures to groups of test animals frequently producing 100% mortality. When 0.01% diphacinone bait was broadcast at 2 pounds per acre in two field tests, no deer mice tagged prior to treatment were recaptured.

Humirski, Stanislaw. MYSIE PLAGI I MIGRACJE. [MOUSE PLAGUE AND MIGRATIONS.] *Wszechswiat* 2: 41-44, illus. 1969. [From Biol. Abstr. 51(5), 1970. In (Polish).] *WR 139: 32*
[Pol. Copernicus Soc. Natural., Warsaw, Poland.]

Instituta Biologicheskikh Akademi Nauk Kirgizskoi SSR. [THE BIOLOGICAL FOUNDATIONS FOR THE CONTROL OF HARMFUL RODENTS.] *ILIM* (Frunze). 241 p., illus. 1968. Price 1 ruble. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I552K. Transl. of Russian abstr.] *WR 139: 32*

Ismagilov, M. I., and A. Bekenov. [DWELLING CONDITIONS AND BIOLOGY OF YELLOW STEPPE LEMMING *(LAGURUS LUTEUS)* IN THE ZAIZANSKY HOLLOW.] *Zool. Zhur.* 48(12): 1869-1878. 1969. [From Biol. Abstr. 51(11), 1970. In Russian with English summ.] *WR 139: 32*
[Acad. Sci. Kaz. SSR, Alma-Ata, USSR.]

Jorgensen, Clive D. SPATIAL RELATIONSHIPS OF *PEROGNATHUS LONGIMEMBRIS* (COUES) IN SOUTHERN NEVADA. *Proc. Utah Acad. Sci. Arts Lett.* 45(1): 118-125, illus. 1968. [From Biol. Abstr. 51(11), 1970.] *WR 139: 32*
[Brigham Young Univ., Provo, Utah.]

Karvlin, B. E., Yu. A. Dubrovskii, and L. V. Komarova. [RESTING PLACES OF GREAT GERBILS INSIDE BURROWS (TEST IN USING RADIOACTIVE LABELS).] *Zool. Zhur.* 48(9): 1395-1400, illus. 1969. [From Biol. Abstr. 51(5), 1970. In Russian with English summ.] *WR 139: 33*
[Acad. Med. Sci. USSR, Moscow, USSR.]

Kaul, D. K., and L. S. Ramaswami. REPRODUCTION IN THE INDIAN DESERT GERBIL *MERIONES-HURRIANAE* JERDON. *Acta Zool.* (Stockholm) 50(3): 233-246, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 33*
[Univ. Rajasthan, Jaipur, Rajasthan, India.]

Kir'yanov, G. I. [THE WATER VOLE IN THE ALTAI KRAI.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 89-97. 1968. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1969, no. 8I570. Transl. of Russian abstr.] *WR 139: 33*

Koshkina, T. V. [PREDICTING THE NUMBER OF FOREST VOLES BY ECOLOGICAL INDICES OF THEIR POPULATION STATE.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(2): 5-16, illus. 1969. [From Biol. Abstr. 51(1), 1970. In Russian with English summ.] *WR 139: 33*

Krebs, Charles J. *MICROTUS* POPULATION BIOLOGY: BEHAVIORAL CHANGES ASSOCIATED WITH THE POPULATION CYCLE IN *M. OCHROGASTER* AND *M. PENNSYLVANICUS*. *Ecology* 51 (1): 34-52, 5 figs. Winter 1970. *WR 139: 33*
[Ind. Univ., Bloomington.] Exploratory activity could not be related to the individual attributes of home range size or duration of life in males of either *Microtus* species. Aggressive behavior changed significantly over the population cycle in both species, and males from peak populations were most aggressive. Multiple discriminant analysis was used to characterize the behavior patterns of males from increasing, peak, and declining populations. These discriminant scores predicted the mean rate of population growth in *M. pennsylvanicus* populations but not in *M. ochrogaster* populations.--From abstr. Courtesy/ Paul A. Stewart.

Kulicke, Horst, and Georg Ritter. ERFOLGSBEURTEILUNG VON WUEHLMAUSBEKAEMPFUNGEN MIT HILFE MARKIERTER KOEDERPRAEPARATE. [ASSESSMENT OF THE SUCCESS OF CONTROLLING THE WATER VOLE BY MEANS OF LABELLED BAIT PREPARATIONS.] *Arch. Pflanzenschutz* 4(3): 179-185. 1968. [From Biol. Abstr. 51(9), 1970. In German with English and Russian summ.] *WR 139: 33*
[Deut. Akad. Landwirt Schaftswiss. Berlin, Eberswalde, Germany.] *"Arvicola terrestris."*

Lavrinenko, A. E., and N. S. Tarasov. [EXPERIENCE IN EXTERMINATING THE CLAWED JIRD WITH POISONED BAIT IN TUVA.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 397-400. 1968. [From Biol. Abstr. 51 (9), 1970, from Referat. Zhur., Biol., 1969, no. 7I562. Transl. of Russian abstr.] *WR 139: 33*
"Rodentia: cricetidae."

Lavrov, I. K. [THE RODENTS AROUND THE SHORES OF THE AREA BEING FLOODED AT THE BRATSK RESERVOIR (USSR).] *Izvest. Biol.-Geogr. Nauch.-Issled. Inst. Irkutsk. Univ.* 20: 359-371. 1967. [From Biol. Abstr. 51(1), 1970, from Referat. Zhur., Biol., 1968, no. 10I544. Transl. of Russian abstr.] *WR 139: 33*

Lavrova, M. Ya., and L. I. Barsova. [HABITAT DISTRIBUTION AND SOME SPECIFIC BIOLOGICAL FEATURES OF TURKISH PINE VOLES *(PITYMYS MAJORI)* AT THE NORTHERN LIMIT OF THEIR RANGE.] *Zool. Zhur.* 48(7): 1107-1110, illus. 1969. [From Biol. Abstr. 51(4), 1970. In Russian with English summ.] *WR 139: 33*
[Cent. Res. Inst. Epidemiol., Moscow, USSR.]

420-877 O - 71 - 3

Lesnyak, L. P., and T. A. Kasymov. [THE DIET OF THE PORCUPINE IN THE CHATAL'SKIE MOUNTAINS.] *Trudy Tashkent. Sel'skokhoz. Inst.* 20: 251-254. 1968. [From Biol. Abstr. 51(1), 1970, from Referat. Zhur., Biol., 1969, no. 51555. Transl. of Russian abstr.] *WR 139: 34*

Marsh, Rex E., and Walter E. Howard. CHEMOSTERILANTS AS AN APPROACH TO RODENT CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 55-63. 1970. *WR 139: 34*
[Univ. Calif., Davis.] See Dana, *WR 139: 16.*

Martin, Robert E. CRANIAL AND BACULAR VARIATION IN POPULATIONS OF SPINY RATS OF THE GENUS *PROECHIMYS* (RODENTIA: ECHIMYIDAE) FROM SOUTH AMERICA. *Smithsonian Contributions Zool.* no. 35. i + 19 p., 12 figs. 1970. For sale by Supt. Documents at 35¢. *WR 139: 34*

Maser, Chris, E. Wayne Hammer, and Murray L. Johnson. ABNORMAL COLORATION IN *MICROTUS MONTANUS*. *Murrelet* 50(3): 39. Sept.-Oct. 1969. *WR 139: 34*
[Oreg. State Univ., Corvallis.] Two *Microtus montanus* possessed abnormally yellow pelage.

McManus, John J., and Joseph A. Mele. TEMPERATURE REGULATION IN THE MONGOLIAN GERBIL, *MERIONES UNGUICULATUS*. *Bull. N.J. Acad. Sci.* 14(1/2): 21-22, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 34*
[Fairleigh Dickinson Univ., Madison, N.J.]

Murai, Eva. THE LESSER MOLE RAT *(SPALAX LEUCODON* NORDM.) AS A NEW HOST OF *MONILIFORMIS MONILIFORMIS* (BREMSER, 1811) MEYER, 1933 (ACANTHOCEPHALA, MONILIFORMIDAE). *Parasitol. Hungarica* 1(1): 109-118, illus. 1968. [From Biol. Abstr. 51(8), 1970.] *WR 139: 34*
[Zool. Dept. Hungarian Nat. Hist. Mus., Budapest, Hungary.]

Neitro, William A. A PERMANENT TYPE POISON STATION FOR PORCUPINE CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 98-100, 1 fig. 1970. *WR 139: 34*
[Bur. Land Mgmt., Medford, Oreg.] See Dana, *WR 139: 16.*

Ota, Kasio. [STUDIES ON THE ECOLOGICAL DISTRIBUTION OF THE MURID RODENTS IN HOKKAIDO.] *Res. Bull. Coll. Exp. Forests Hokkaido Univ.* 26(1): 223-295, illus. 1968. [From Biol. Abstr. 51(1), 1970. In Japanese with English summ.] *WR 139: 34*
[Univ. Hokkaido, Sapporo, Japan.]

Otsu, Shoei. [ON WOOD MICE (VOLES) IN YAMAGATA PREFECTURE: I. THE DISTRIBUTION OF WOOD MICE IN MOUNTAINOUS DISTRICTS.] *Jap. J. Appl. Entomol. Zool.* 13(1): 5-8, illus. 1969. [From Biol. Abstr. 51(11), 1970. In Japanese with English summ.] *WR 139: 34*
[Forest Res. Inst. Yamagata Prefect., Sagae, Yamagata, Japan.]

Peoples, S. A. THE PHARMACOLOGY OF RODENTICIDES. *Proc. 4th Vertebrate Pest Conf.* p. 15-18. 1970. *WR 139: 34*
[Univ. Calif., Davis.] See Dana, *WR 139: 16.*

Pinter, Aelita J. REPRODUCTION AND GROWTH FOR TWO SPECIES OF GRASSHOPPER MICE *(ONYCHOMYS)* IN THE LABORATORY. *J. Mammal.* 51(2): 236-243. May 1970. *WR 139: 34*
[Touro Res. Inst., 1400 Foucher St., New Orleans, La.] *"Onychomys torridus torridus* and *O. leucogaster articeps."*

Prakash, Ishwar. ECO-TOXICOLOGY AND CONTROL OF INDIAN DESERT GERBIL, *MERIONES HURRIANAE* (JERDON): FOOD PREFERENCE IN THE FIELD DURING MONSOON. *Bombay Natur. Hist. Soc.* 65(3): 581-589. 1968. [From Biol. Abstr. 51(9), 1970.] *WR 139: 34*
[Cent. Arid Zone Res. Inst., Jodhpur, Rajasthan, India.]

Pyn'ko, R. G. [THE FATE OF RODENT CARCASSES ON THE STEPPE OF THE SOUTH-EASTERN PART OF THE TRANSBAIKAL.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 3-6. 1968. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 8I552. Transl. of Russian abstr.] *WR 139: 35*

Radda, A., G. Pretzmann, and H. M. Steiner. BIONOMISCHE UND OEKOLOGISCHE STUDIEN AN OESTERREICHISCHEN POPULATIONEN DER GELBHALSMAUS *(APODEMUS FLAVICOLLIS*, MELCHIOR 1834*)* DURCH MARKIERUNGSFANG. [BIONOMICAL AND ECOLOGICAL STUDIES ON AUSTRIAN POPULATIONS OF THE YELLOW-NECKED FIELD MOUSE *(APODEMUS FLAVICOLLIS*, MELCHIOR 1834*)* BY MARK AND RELEASE TRAPPING.] *Oecologia* 3(3/4): 351-373, illus. 1969. [From Biol. Abstr. 51(5), 1970. In German with English summ.] *WR 139: 35*
[Univ. Vienna, Vienna, Austria.]

Romankowowa, Anna, Benedykt Karczewski, and Stanislaw Bojarski. BADANIE PRZYDATNOSCI KRAJOWEGO PROTOTYPU URZADZENIA DO ZWALCZANIA GRYZONI POLYNCH ZA POMOCA GAZOW SILNIKA SPALINOWEGO. [INVESTIGATION ON THE FITNESS OF THE PROTOTYPE TO CONTROL THE COMMON VOLE BY USING CO FROM PETROL ENGINE.] *Pr. Nauk. Inst. Ochrony Roslin* 9(1): 171-179, illus. 1967. [From Biol. Abstr. 51(13), 1970. In Polish with Russian and English summ.] *WR 139: 35*
[Inst. Ochr. Rosl., Poznan, Poland.]

Rood, J. P. ECOLOGY AND SOCIAL BEHAVIOR OF THE DESERT CAVY *(MICROCAVIA AUSTRALIS)*. *Am. Midland Nat.* 83(2): 415-454, 6 figs. Apr. 1970. *WR 139: 35*
[Mich. State Univ., East Lansing.] Life history, reproductive behavior, social interactions, and population dynamics of a community of individually marked *Microcavia australis* were studied in a xerophytic thornbush habitat in Buenos Aires Province, Argentina, from April 1966 to October 1967.--From abstr.

Rosenzweig, Michael L., and Philip W. Sterner. POPULATION ECOLOGY OF DESERT RODENT COMMUNITIES: BODY SIZE AND SEED-HUSKING AS BASES FOR HETEROMYID COEXISTENCE. *Ecology* 51(2): 217-224, 2 figs. Early Spring 1970. *WR 139: 35*
[State Univ. N.Y., 1223 Western Ave., Albany.] Time required to husk seeds was inversely proportional to the animal's size, but smaller animals appeared more efficient with large seeds because of their smaller metabolic drain. However, resource allocation based on husking speed differences seems of little potential importance in maintaining competing heteromyids in coexistence.--Courtesy/ Paul A. Stewart.

Rowe, F. P., J. H. Greaves, R. Redfern, and A. D. Martin. RODENTICIDES--PROBLEMS AND CURRENT RESEARCH. *Proc. 4th Vertebrate Pest Conf.* p. 126-128. 1970. *WR 139: 35*
[Infestation Control Lab., Tolworth, Surbiton, Surrey, England.] See Dana, *WR 139: 16*.

Sabilaev, A. S. [ECOLOGY OF *ALLACTAGA SEVERTZOVI* IN KARA-KALPAK.] *Zool. Zhur.* 48(6): 902-911, illus. 1969. [From Biol. Abstr. 51(2), 1970. In Russian with English summ.] *WR 139: 35*
[Kara-Kalpak Antiplague Sta., Nukus, USSR.] "Jerboa."

Sawicka-Kapusta, Katarzyna. CHANGES IN THE GROSS BODY COMPOSITION AND THE CALORIC VALUE OF THE COMMON VOLES DURING THEIR POSTNATAL DEVELOPMENT. *Acta Theriologica* 15(4): 67-79, 7 figs. 1970. In English with Polish summ. *WR 139: 35*
[Jagiellonian Univ., Krakow, Poland.] Abstract: Changes in the chemical body composition were studied in 123 specimens of the common vole in the age between 0 and 30 days. The average body weight of voles increases with age (from 1.9 to 16.0 g). The percentages of water, protein and fat are highly correlated with body weight *(r=0.92)*. The water content in the body of voles decreases with age (from 83.7 to 63.3%) similarly as the content of proteins

(from 65.9 to 44.4%). On the other hand the relative fat content increases (from 17.1 to 39.1%), while the ash content remains fairly constant (around 9.5%). In the fat-free biomass the water content decreased, while proteins and ash increase progressively with the age of animals. The energy values of the fat-free dry weight and ash-free dry weight remain on similar level. The index of physiological age expressed by the ratio of protein to water contents shows a rising trend with the body weight and age of voles.

Sayler, Annie. THE ESTROUS CYCLE AND ESTROUS-RELATED BEHAVIOR IN THE COLLARED LEMMING. *Forma Functio* 3: 227-237, illus. 1969. [From Biol. Abstr. 51(3), 1970. In English with German and French summ.] *WR 139: 36*
[Univ. Ill., Urbana.] *"Dicrostonyx groenlandicus."*

Sealander, John A., and Charles E. Guess. EFFECT OF FORCED SWIMMING ON BODY TEMPERATURES AND EOSINOPHIL LEVELS IN COTTON RATS *(SIGMODON HISPIDUS)*. *J. Mammal.* 51(2): 348-357, 3 figs. May 1970. *WR 139: 36*
[Univ. Ark., Fayetteville.]

Sokolov, V. E., and L. N. Skurat. [THE GROWTH AND DEVELOPMENT OF GREAT GERBIL *(RHOMBOMYS OPIMUS)*.] *Zool. Zhur.* 48(12): 1860-1868, illus. 1969. [From Biol. Abstr. 51(11), 1970. In Russian with English summ.] *WR 139: 36*
[Acad. Sci. USSR, Moscow, USSR.]

Steiniger, F. TRICHINOSE UND RATTENSICHERUNG MIT BEKAEMPFUNGSMITTELRESERVEN. [TRICHINOSIS AND CONTROL OF RATS BY PESTICIDE RESERVES.] *Deutsche Tieraerztl. Wochensehr.* 76(15): 404-406. 1969. [From Biol. Abstr. 51(5), 1970. In German with English summ.] *WR 139: 36*

Surkov, V. S. [INFORMATION ON THE DISTRIBUTION BY STATION OF RELATIVE POPULATION SIZES AND SOME ECOLOGICAL TRAITS OF THE NORTHERN AND LARGE-TOOTHED REDBACK VOLES IN THE SOUTHERN PART OF SAKHALIN ISLAND.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 29-34. 1968. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1969, no. 8I574. Transl. of Russian abstr.] *WR 139: 36*

Terranova, E. Vadala. UNA GRAVE MINACCIA: L'ARVICOLA. [THE FIELD MOUSE: A GRAVE MENACE.] *Tec. Agr.* 22(1): 60-67, illus. 1968. [From Biol. Abstr. 51 (7), 1970. In Italian.] *WR 139: 36*
"Microtus and *Clethrionomys."*

Teshima, Allen H. RODENT CONTROL IN THE HAWAIIAN SUGAR INDUSTRY. *Proc. 4th Vertebrate Pest Conf.* p. 38-40. 1970. *WR 139: 36*
[Hawaiian Sugar Planters' Assoc., Hilo, Hawaii.] See Dana, *WR 139: 16.*

Thaeler, Charles S., Jr. AN ANALYSIS OF THE DISTRIBUTION OF POCKET GOPHER SPECIES IN NORTHEASTERN CALIFORNIA (GENUS *THOMOMYS*). *Univ. Calif. Publ. Zool.* 86. 46 p., 13 figs. 19 Sept. 1968. Price $2.00. *WR 139: 36*
Five species of the pocket gopher genus *Thomomys (bottae, townsendii, monticola, mazama,* and *talpoides)* occur in northeastern California. Accounts of these species are presented giving brief descriptions of the range of morphologic variation and habitat diversity of each. The distribution of these species, based on records of occurrence from 514 localities, is described. In general the statements of previous workers that pocket gopher species maintain allopatric ranges are substantiated. A number of contacts between the ranges of species were studied. Although specimens of two species did occur within a few feet of one another, usually no overlap was found.--From summ.

Turkowski, Frank J., and Hudson G. Reynolds. RESPONSE OF SOME RODENT POPULATIONS TO PINYON-JUNIPER REDUCTION ON THE KAIBAB PLATEAU, ARIZONA. *Southwestern Nat.* 15(1): 23-27, 1 fig. 1 June 1970. *WR 139: 36*
[Phoenix Zoo, Phoenix, Ariz.] Abstract: Uprooting pinyon and juniper trees with a bulldozer for rangeland improvement changed habitat conditions enough to

affect populations of several species of small rodents. In general, numbers of resident rodents increased and additional species invaded the treatment areas. Brush and piñon mouse populations were exceptions; they decreased. Additional herbaceous cover and dead trees on the ground were the gross habitat changes associated with population differences.

Varshavskii, S. N., M. N. Shilov, V. K. Garbuzov, S. N. Marin, and N. A. Ponomarev. [MODERN DISPERSAL OF THE GREAT GERBIL IN THE NORTHERN ARAL FORELAND AND ITS EPIZOOTIC IMPORTANCE.] *Zool. Zhur.* 48(1): 126-134. 1969. [From Biol. Abstr. 51(3), 1970. In Russian with English summ.] *WR 139: 37*

Vershinin, N. M. [SOME OBSERVATIONS ON THE EFFECT OF PLOWING UP THE STEPPE ON THE SIZE OF THE MURINE RODENT POPULATION.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 13-16. 1968. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 8I546. Transl. of Russian abstr.] *WR 139: 37*

Wallace, James T. SOME NOTES ON THE GROWTH, DEVELOPMENT AND DISTRIBUTION OF *OCHROTOMYS NUTTALLI* (HARLAN) IN KENTUCKY. *Trans. Ky. Acad. Sci.* 30(1/2): 45-52, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 37*
[Univ. Pa., Pittsburgh.]

Watts, C. H. S. A FIELD EXPERIMENT ON INTRASPECIFIC INTERACTIONS IN THE RED-BACKED VOLE, *CLETHRIONOMYS GAPPERI*. *J. Mammal.* 51(2): 341-347, 3 figs. May 1970. *WR 139: 37*
[Inst. Med. & Veterinary Sci., Adelaide, South Australia.] Abstract: Acting on the hypothesis that dominant male red-backed voles, *Clethrionomys gapperi*, killed or drove out juveniles during the breeding season, large males were selectively removed from four areas of woodland during the spring and summer of 1967. The results obtained were compared with those from four untouched areas. Experimental and control areas alternated along a narrow strip of forest atop a stabilized sand dune bordered by uncolonized habitat (marsh) in southern Manitoba. Each area measured 300 by 50 to 80 meters. There was little movement between areas. Numbers known to be present increased more rapidly on three out of the four experimental areas than on their respective control areas due mainly to a greater number of juveniles in the catches on these areas. An examination of size distributions indicated that juveniles on the control areas entered the trappable populations about 3 weeks later than those on the areas where large males had been removed. This caused the numbers known to be present on the control areas to lag behind those on the experimental areas during the early part of the breeding season. This analysis led to the suggestion that the presence of large males in some way inhibits the first approach to a trap by juveniles. The evidence gathered provided no support for the initial hypothesis.

Weaver, W. G., Jr. COURTSHIP AND COMBAT BEHAVIOR IN *GOPHERUS BERLANDIERI*. *Bull. Fla. State Mus.* 15(1): 1-43, 15 figs. 1970. *WR 139: 37*
Description and comparisons of behavioral sequences of courtship and combat behavior in the *Gopherus berlandieri* with other species are provided. Attention is given to physiological events, as well. Events in the initiation of courtship and detection of opposite sex were observed to differ between species.

Wojciechowska, Bożenna. THE GROWTH AND NET PRODUCTION IN THE COMMON VOLE DURING POSTNATAL PERIOD. *Acta Theriologica* 15(5): 81-88, 3 figs. 1970. In English with Polish summ. *WR 139: 37*
[Silesian Univ. Krasinskiego, Katowice, Poland.] The litter size in *Microtus arvalis* (Pallas, 1778) depends on the female body weight. In individuals of 15-30 g of biomass the average litter consists of 4.9 new-borns, and in heavier females (30-45 g) -- of 5.9. The weight of a new-born vole is not related to the female weight and ranges from 1.26 to 2.64 g (avg.= 1.8 g). The net production due to reproduction estimated for average European conditions amounts in this species to 50.9 kcal/litter. The amplitude of body weight changes during a year is equal to 7.15 g for males and 8.32 g for females.--From abstr.

Zejda, Jan, and Jaroslav Pelikan. MOVEMENTS AND HOME RANGES OF SOME RODENTS IN LOWLAND FORESTS. *Zool. Listy* 18(2): 143-162, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 38*
[Czech. Acad. Sci., Brno, Czechoslovakia.]

RATTUS & MUS

Barbehenn, Kyle R. NOTES ON THE ECOLOGY OF SEWER RATS IN ST. LOUIS. *Proc. 4th Vertebrate Pest Conf.* p. 18-22. 1970. *WR 139: 38*
[Washington Univ., St. Louis, Mo.] See Dana, *WR 139: 16.*

Becker, K. DIE ENTWICKLUNG DER RATTENBEKÄMPFUNG IN DER BUNDESREPUBLIK DEUTSCHLAND SEIT 1945. [THE DEVELOPMENT OF RAT CONTROL IN THE FEDERAL REPUBLIC OF GERMANY SINCE 1945.] *SchrReihe Ver. Wass.-Boden-Lufthyg. (Berlin-Dahlem)* 32: 111-129, 3 figs. 1969. In German with English summ. *WR 139: 38*
[Correnplatz 1, Berlin, Germany.]

Becker, Kurt. DIE VERBREITUNG DER LEPTOSPIREN BEI RATTEN IN EINER GROSSTADT (BERLIN). [THE DISTRIBUTION OF LEPTOSPIRAE AMONG RATS IN A MEGAPOLIS (BERLIN).] *SchrReihe Ver. Wass.-Boden-Lufthyg. (Berlin-Dahlem)* 32: 49-66, 1 fig. 1969. In German with English summ. *WR 139: 38*
[Correnplatz 1, Berlin, Germany.] Differences in infestation rates between *Rattus norvegicus* and *R. rattus* were noted. Infestation rates varied by age class and habitat. Rats living in positively dry, or only periodically damp, biotopes are normally free of leptospirae.--From summ.

Campbell, Howard W. ANECDOTAL OBSERVATIONS SUPPORTING THE UNDIGESTIBILITY OF *RATTUS NORVEGICUS* EPIDERMIS FOR LOWER VERTEBRATES. *Bull. Md. Herpetol. Soc.* 6(2): 17. June 1970. *WR 139: 38*
[Fla. State Mus., Gainesville.]

Egoscue, Harold J. A LABORATORY COLONY OF THE POLYNESIAN RAT, *RATTUS EXULANS*. *J. Mammal.* 51(2): 261-266. May 1970. *WR 139: 38*
[Univ. Utah, Dugway.] Abstract: A colony of Polynesian rats, *Rattus exulans*, descended from stock captured in the Marshall Islands was maintained in captivity through eight generations. Most monogamous pairs remained compatible for life. Females are polyestrous and breed throughout the year. Litter size ranged from one to 10 (average 3.8); the mode was four. Efforts to increase litter size by selection were unsuccessful. Females bore one to 13 (average 5.2) litters per year but usually had a lifetime production potential of 12 months or less. The maximum litters per lifetime was 18. Minimum nonlactating gestation was 23 days. Lactation prolonged gestation 3 to 7 days. The breeding cycle includes a post-partum estrus.

Hood, Glenn A., Roger D. Nass, and Gerald D. Lindsey. THE RAT IN HAWAIIAN SUGARCANE. *Proc. 4th Vertebrate Pest Conf.* p. 34-37. 1970. *WR 139: 38*
[Bur. Sport Fisheries & Wildl., USDI, Hilo, Hawaii.] *"Rattus exulans, R. norvegicus,* and *R. rattus."* See Dana, *WR 139: 16.*

Hori, Eitaro, Kenji Miyamoto, Osamu Ikeda, Hisao Abe, and Hiroshi Nakasawa. [A SURVEY OF PARASITIC HELMINTHS, ESPECIALLY *ANGIOSTRONGYLUS CANTONENSIS* (CHEN, 1935) DOUGHERTY, 1946 FROM HOUSE RODENTS IN THE HARBOR SIDE AREAS AND OVERSEAS SHIPS OF YOKOHAMA AND KAWASAKI.] *Jap. J. Parasitol.* 18(3): 258-264. 1969. [From Biol. Abstr. 51(11), 1970. In Japanese with English summ.] *WR 139: 38*
[Tokyo Med. & Dent. Univ., Tokyo, Japan.]

Ikeda, Osamu. [STUDIES ON THE RATS AND FLEAS IN THE HARBOR AREAS OF YOKOHAMA AND KAWASAKI: 2. RODENTS IN THE OVERSEAS SHIP.] *Jap. J. Sanit. Zool.* 18(4): 284-288. 1967. [From Biol. Abstr. 51(4), 1970. In Japanese with English summ.] *WR 139: 38*
[Yokohama Quar., Yokohama, Kanagawa, Japan.]

Jackson, William B. SURVIVAL OF RATS AT ENIWETOK ATOLL. *Pac. Sci.* 23(3): 265-275, illus. 1969. [From Biol. Abstr. 51(3), 1970.] *WR 139: 39*
[Bowling Green State Univ., Bowling Green, Ohio.]

Khamaganov, S. A. [THE HABITAT OF THE BROWN RAT IN POPULATED POINTS OF THE AMUR FORELAND NEAR KHABAROVSK.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 128-131. 1968. [From Biol. Abstr. 51(11), 1970, from Referat. Zhur., Biol., 1969, no. 8I553. Transl. of Russian abstr.] *WR 139: 39*

Krishnamurthy, K., V. Uniyal, and S. V. Pingale. STUDIES ON RODENTS AND THEIR CONTROL: IV. SUSCEPTIBILITY OF *RATTUS RATTUS* TO WARFARIN. *Bull. Grain Technol.* 6(3): 133-137. 1968. [From Biol. Abstr. 51(8), 1970.] *WR 139: 39*
[Indian Grain Storage Inst., Hapur, Uttar Pradesh, India.]

Krishnamurthy, K., and V. Uniyal. STUDIES ON RODENTS AND THEIR CONTROL: V. SOME FACTORS AFFECTING LETHAL FEEDING PERIOD WITH WARFARIN. *Bull. Grain Technol.* 7(1): 1-8. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 39*
[Indian Grain Storage Inst., Hapur, Uttar Pradesh, India.] *"Rattus rattus."*

Lavrent'ev, N. I. [THE ROLE OF GRAY RATS *(RATTUS NORVEGICUS)* AS A SOURCE OF LEPTOSPIRA INFECTION.] *Trudy Sverdlovsk. Nauch.-Issled. Vet. Sta.* 6: 78-81. 1968. [From Biol. Abstr. 51(13), 1970, from Referat. Zhur., Biol., 1969, no. 9B1024. Transl. of Russian abstr.] *WR 139: 39*

Tanaka, Ikuo, Kazuki Ogata, and Takeshi Suzuki. [SOME TESTS ON THE EFFECTS OF A NEW RODENTICIDE, NORBORMIDE, ON RATS AND MICE.] *Japanese J. Sanit. Zool.* 18(1): 39-43, illus. 1967. [From Biol. Abstr. 51(8), 1970. In Japanese with English summ.] *WR 139: 39*
[Univ. Tokyo, Tokyo, Japan.]

SCIURIDS

Ackerman, Ralph, and Peter D. Weigl. DOMINANCE RELATIONS OF RED AND GREY SQUIRRELS. *Ecology* 51(2): 332-334. Early Spring 1970. *WR 139: 39*
[D Company, 2nd Med. Bn., 2nd Infantry Div., APO San Francisco 96224.]
The much publicized aggressiveness of the red squirrel toward the grey may be a function of territorial behavior in certain parts of its range (conifer forest) rather than an inherent characteristic of the species.--From abstr. Courtesy/ Paul A. Stewart.

Broadbooks, Harold E. POPULATIONS OF THE YELLOW-PINE CHIPMUNK, *EUTAMIAS AMOENUS*. *Am. Midland Nat.* 83(2): 472-488, 10 figs. Apr. 1970. *WR 139: 39*
[Southern Ill. Univ., Edwardsville.] A population of about 600 yellow-pine chipmunks in the Cascade Mountains in central Washington was investigated for approximately 12 months in three different years. Although overlapping in their habitats and foods, the three diurnal sciurids (pine squirrels, *Tamiasciurus douglasii*; golden-mantled ground squirrels, *Spermophilus lateralis*; and chipmunks, *Eutamias amoenus*) all flourished together in considerable numbers. Population density of the chipmunks appeared to be controlled mainly by territorial behavior that spaced individuals a minimum of about 50 feet apart, and by predation from eight diurnal carnivores.--From abstr.

Broadbooks, Harold E. HOME RANGES AND TERRITORIAL BEHAVIOR OF THE YELLOW-PINE CHIPMUNK, *EUTAMIAS AMOENUS*. *J. Mammal.* 51(2): 310-326, 5 figs. May 1970. *WR 139: 39*
[Southern Ill. Univ., Edwardsville.] Abstract: About 600 chipmunks, *Eutamias amoenus*, were live-trapped and observed on a study area of 42 acres in yellow pine forest in central Washington. Observation of dyed chipmunks showed that home ranges revealed by live-trapping are reasonably accurate. Evidence that male yellow-pine chipmunks are more active and have considerably

larger home ranges than do females is consistent with studies of other mammals. Annual home ranges of adult males averaged 947 by 534 feet and covered 4.07 acres; those of adult females averaged 686 by 368 feet and had a mean area of 2.32 acres. Some ranges were elongate despite a relatively uniform habitat. Adult breeding females had an average of 6.4 neighboring females overlapping their home ranges, the mean area of overlap being 21.7% and number of captures 25.8%. Most chipmunks that were recaptured in the second and fifth years occupied their original home ranges. In 43 homing tests 88% (15 of 17) of the chipmunks returned from points 430 to 1500 feet from home, 57% (12 of 21) from half a mile, and 25% (one of 4) released 1 mile distant. Seventy-seven per cent of the males but only 25% of the females returned half a mile. A shift of home range was accomplished by 7.8% of the females and 11.9% of the males recaptured the second year. Twenty-eight per cent (13 of 46) of the young animals caught in June and July were recaptured in the autumn. Evidence from spacing of chipmunks and from observations of aggressive behavior near the den indicated that they are territorial.

Brom, I. P. [EXPERIENCE IN EXTERMINATING THE LONG-TAILED SIBERIAN SOUSLIK.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 382-391. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I560. Transl. of Russian abstr.] *WR 139: 40*

Davidson, A. M. RED SQUIRRELS IN THETFORD CHASE: II. (ENGLAND). *Quart. J. Forestry* 63(3): 211-222, illus. 1969. [From Biol. Abstr. 51(2), 1970.] *WR 139: 40*

Derevshchikov, A. G., and S. M. Purtov. [EXPERIENCE IN EXTERMINATING THE LONG-TAILED SIBERIAN SUSLIK IN THE MOUNTAIN ALTAI.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 401-409. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I561. Transl. of Russian abstr.] *WR 139: 40*

Dunford, Christopher. BEHAVIORAL ASPECTS OF SPATIAL ORGANIZATION IN THE CHIPMUNK, *TAMIAS STRIATUS*. *Behaviour* 36(3): 215-231, 7 figs. 1970. In English with French summ. *WR 139: 40*

[Univ. Ariz., Tucson.] Spatial organization, agonistic behavior, and vocalization in the eastern chipmunk.

Fisher, K. C., and N. Mrosovsky. EFFECTIVENESS OF KCl AND NaCl INJECTIONS IN AROUSING 13-LINED GROUND SQUIRRELS FROM HIBERNATION. *Canadian J. Zool.* 48 (3): 595-596. May 1970. *WR 139: 40*

[Mrosovsky: Univ. Toronto, Toronto, Ontario, Canada.] Abstract: Injections of relatively concentrated solutions of KCl were more effective in arousing 13-lined ground squirrels from hibernation than injections of NaCl solutions of equal osmolarity. The result supports the theory that metabolic end products trigger arousals.

Grakov, N. N. [UTILIZATION OF THE STOCKS OF SQUIRRELS IN THE NORTH OF THE EUROPEAN USSR DURING THE 1935-1939 AND 1955-1959 FIVE-YEAR PLANS.] *Sbornik Nauch.-Tekh. Inform. Vses. Nauch.-Issled. Zhivotn. Syr'ya Pushniny* 23: 29-33. 1968. [From Biol. Abstr. 51(1), 1970, from Referat. Zhur., Biol., 1969, no. 6I571. Transl. of Russian abstr.] *WR 139: 40*

Gruzdev, V. V. [MODERN NORTHERN LIMIT OF THE AREA OF DISTRIBUTION OF THE LITTLE SOUSLIK *(CITELLUS PYGMAEUS* PALL.*)* AND POSSIBILITIES OF ITS FURTHER MIGRATION IN THE EUROPEAN PART OF THE USSR.] *Zool. Zhur.* 47(1): 154-158. 1968. [From Biol. Abstr. 51(5), 1970. In Russian with English summ.] *WR 139: 40*

[Moscow State Univ., Moscow, USSR.]

SCIURIDS--Continued

Kiris, I. D. [THE FOOD SUPPLY OF SQUIRRELS.] *Sbornik Trudy Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 22: 75-201. 1969. [From Biol. Abstr. 51(2), 1970, from Referat. Zhur., Biol., 1969, no. 6I478. Transl. of Russian abstr.] *WR 139: 41*

Mahrt, Jerome L., and Soo-Jeet Chai. PREVALENCE OF COCCIDIA IN RED SQUIRRELS *(TAMIASCIURUS HUDSONICUS)* IN ALBERTA. *Canadian J. Zool.* 48(3): 606. May 1970. *WR 139: 41*
[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: Oocysts of *Eimeria tamiasciuri* and *Eimeria toddi* were found in 166 (97%) and 10 (6%) of 171 red squirrels. The occurrence of both species in red squirrels from Alberta extends the known range of these coccidia.

Millar, John S. THE BREEDING SEASON AND REPRODUCTIVE CYCLE OF THE WESTERN RED SQUIRREL. *Canadian J. Zool.* 48(3): 471-473, 3 figs. May 1970. *WR 139: 41*
[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: Breeding in the red squirrel, *Tamiasciurus hudsonicus* (Erxleben), in southern British Columbia differed in some respects from that reported in eastern North America. The period during which males were capable of breeding varied from 2 to 6 months, and their reproductive organs showed only a single peak in size each year. All breeding females produced two litters in 1966, but only one litter in 1967. Females did not breed during the year of their birth, and, in 1967, some did not breed as yearlings. February appeared to be the earliest date for the onset of breeding in southern British Columbia. The timing of breeding may be influenced by weather conditions.

Nellis, Carl H. SEX AND AGE VARIATION IN RED SQUIRREL SKULLS FROM MISSOULA COUNTY, MONTANA. *Canadian Field-Naturalist* 83(4): 324-330. Oct.-Dec. 1969. *WR 139: 41*
[Univ. Wis., Madison.] *"Tamiasciurus hudsonicus."*

Pavlov, B. K., and M. I. Smyshlyaev. [A COMPARATIVE ANALYSIS OF METHODS FOR DETERMINING THE FERTILITY OF SQUIRRELS.] *Sbornik Nauch.-Tekh. Inform Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 23: 3-8. 1968. [From Biol. Abstr. 51(2), 1970, from Referat. Zhur., Biol., 1969, no. 6I452. Transl. of Russian abstr.] *WR 139: 41*

Pengelley, E. T., and Sally M. Asmundson. FREE-RUNNING PERIODS OF ENDOGENOUS CIRCANNIAN RHYTHMS IN THE GOLDEN MANTLED GROUND SQUIRREL, *CITELLUS LATERALIS*. *Comp. Biochem. Physiol.* 30(1): 177-183, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 41*
[Univ. Calif., Riverside.]

Rusev, G., and St. Stefanov. [ABOUT SOME CHANGES IN THE GROUND SQUIRREL *(CITELLUS CITELLUS)* METABOLISM IN RESPECT TO HIBERNATION.] *God. Sofiiskiya Univ. Biol. Fak. Kn. 1 Zool. Biokhim. Zhivotn.* 61: 197-208. 1966/1967. [From Biol. Abstr. 51(3), 1970. In Bulgarian with English summ.] *WR 139: 41*

Seth, Pushpa, and M. R. N. Prasad. REPRODUCTIVE CYCLE OF THE FEMALE FIVE-STRIPED INDIAN PALM SQUIRREL, *FUNAMBULUS PENNANTI* (WROUGHTON). *J. Reprod. Fert.* 20(2): 211-222, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 41*
[Univ. Delhi, Delhi, India.]

BEAVER

Aleksiuk, Michael. THE SEASONAL FOOD REGIME OF ARCTIC BEAVERS. *Ecology* 51 (2): 264-270, 3 figs. Early Spring 1970. *WR 139: 41*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] Northern beavers *(Castor canadensis)* have adapted to low energy availability characteristic of winter by storing food in the autumn and spring and by lowering food intake during the winter. They have adapted to seasonal variation in protein availability by utilizing high-protein willow leaves almost exclusively when these are available.--Courtesy/ Paul A. Stewart.

Call, Mayo White. BEAVER POND ECOLOGY AND BEAVER-TROUT RELATIONSHIPS IN SOUTHEASTERN WYOMING. *Univ. Wyo.* and *Wyo. Game & Fish Comm.* viii + 296 p., [27 figs.]. June 1966. *WR 139: 42*

The interrelationships of beaver, trout and aspen forest habitats, as studied in the Pole Mountain District of Wyoming, are analysed in detail. Interdependency of pond utilization by trout in relationship to beaver habitat was stressed. The ideal situation would be to retain sufficient beaver to maintain the better strings of dams along the best fishing streams but reduce present beaver numbers to slow down the rate of aspen utilization and destruction. Oxygen content of beaver pond waters was found to be the only factor which might affect the survival of trout. A limnological study of beaver ponds, as related to pond productivity, is included. Management objectives and plans are discussed in detail.--From summ.

Moore, Jerry A., and Joseph S. Larson. BEAVER IN ACID MINE DRAINAGE. *Chesapeake Sci.* 11(1): 63-64. Mar. 1970. *WR 139: 42*

[Bur. Outdoor Recreation, 1421 Cherry St., Philadelphia, Pa.] "Bingamon Creek, W. Va."

MUSKRAT & NUTRIA

Becker, K. POPULATIONSSTUDIEN AN BISAMRATTEN *(ONDATRA ZIBETHICUS L.)*. I. ALTERSAUFBAU VON POPULATIONEN DER BISAMRATTE. [POPULATION STUDIES OF THE MUSKRAT *(ONDATRA ZIBETHICUS L.)*. I. AGE STRUCTURE OF MUSKRAT POPULATIONS.] *Zool. Beiträge* 13: 369-396. 1967. In German. *WR 139: 42*

[Correnplatz 1, Berlin, Germany.]

Becker, Kurt. POPULATIONSSTUDIEN AN BISAMRATTEN *ONDATRA ZIBETHICUS* L. II. GESCHLECHTERVERHÄLTNIS. [POPULATION STUDIES OF THE MUSKRAT *(ONDATRA ZIBETHICUS L.)*. II. SEX RATIOS.] *Zool. Beiträge* 15(2-3): 363-373. 1969. In German. *WR 139: 42*

[Correnplatz 1, Berlin, Germany.]

Grigor'ev, N. D., and Yu. E. Egorov. [THE BIOCOENOTIC CONNECTIONS OF THE MINK WITH THE COMMON OTTER IN THE BASHKIRIAN SSR.] *Sbornik Trudy Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 22: 26-32. 1969. [From Biol. Abstr. 51 (2), 1970, from Referat. Zhur., Biol., 1969, no. 6I493. Transl. of Russian abstr.] *WR 139: 42*

Korsakova, I. B. [THE AGE AND SEX STRUCTURE OF THE MUSKRAT POPULATION OF THE PRIMORSKII RAION OF THE AMU-DAR'YA RIVER DELTA.] *Sbornik Trudy Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 22: 33-46. 1969. [From Biol. Abstr. 51(2), 1970, from Referat. Zhur., Biol., 1969, no. 6I572. Transl. of Russian abstr.] *WR 139: 42*

FUR ANIMALS, GENERAL

Woolsey, Norman G. OUR FUR-BEARING PREDATORS. *Wildl. Views* 17(3): 24-27, illus. May-June 1970. *WR 139: 42*

Coyote pelts are bringing the highest prices since the early 1940's, while bobcat has replaced beaver and muskrat as the number one fur in Arizona. Gray foxes, raccoons, and ringtail cats are other long-haired furs that are in demand on the "fun fur" market.

BEARS

Craighead, John J., Frank C. Craighead, Jr., and Henry E. McCutchen. AGE DETERMINATION OF GRIZZLY BEARS FROM FOURTH PREMOLAR TOOTH SECTIONS. *J. Wildl. Mgmt.* 34(2): 353-363, 4 figs. Apr. 1970. *WR 139: 43*

[Mont. Coop. Wildl. Res. Unit, Missoula.] Abstract: The cementum-layer aging technique was tested for grizzly bears *(Ursus arctos)* by comparing the deposition of dark-staining and light-staining layers in the lower fourth premolars of 12 grizzlies, 9 of which were known- or established-age. The phenomenon of cementum layering in P_4 appeared to persist throughout the life of the grizzly bear. Extracting premolars in alternate years revealed that one wide, light-staining and one narrow, dark-staining layer was deposited during each year of life. The annuli became progressively more difficult to count in older bears and separate annuli can not always be traced around the entire tooth. Individual variation was evident, but the light zones were largely formed during July, August, and September. Deposition of this layer began in May or June when bears weighed the least. The dark layer was not generally evident until late fall and sometimes was not well-defined in April. Thus it appeared that formation of the dark layer may extend from early autumn to May. There appeared to be no relationship between deposition of the dark cementum layer and low nutrition because bears remained in good physical condition throughout fall and winter. The first five annuli are wider than subsequent annuli. This phenomenon may be correlated with physical maturation and cessation of rapid growth.

Fain, A., and D. E. Johnston. UN NOUVEL ACARIEN DE LA FAMILLE AUDYCOPTIDAE CHEZ L'OURS NOIR *URSUS AMERICANUS* (SARCOPTIFORMES). [A NEW ACARINE OF THE FAMILY AUDYCOPTIDAE ON THE BLACK BEAR *(URSUS AMERICANUS).*] *Acta Zool. & Pathol. Antverpiensia* no. 50. p. 179-181, 6 figs. Jan. 1970. In French. *WR 139: 43*

[Inst. Méd. Tropicale Prince Léopold, Antwerp, Belgium.]

Haynes, Bessie Doak, and Edgar Haynes. THE GRIZZLY BEAR / PORTRAITS FROM LIFE. *Univ. Okla. Press* (Norman). xxi + 386 p., illus., 6.25 x 9.25 in. 1966. Price $5.00. *WR 139: 43*

An anthology of 48 accounts of grizzlies spanning the period 1691 to 1963. "This book will be of interest to sportsmen, naturalists, and all who are concerned with the history of the West."

Jonkel, C. J. SOME COMMENTS ON POLAR BEAR MANAGEMENT. *Biol. Conserv.* 2(2): 115-119, illus. 1970. [From Biol. Abstr. 51(13), 1970.] *WR 139: 43*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.]

Myrberget, Svein. DEN NORSKE BESTAND AV BJORN, *URSUS ARCTOS* L. [THE NORWEGIAN POPULATION OF BROWN BEAR, *URSUS ARCTOS* L.] *Meddeleleser Statens Viltundersokelser Pap. Norwegian State Game Res. Inst.* 2(29): 3-21, illus. 1969. [From Biol. Abstr. 51(9), 1970. In Norwegian with English summ.] *WR 139: 43*

[Norwegian State Game Res. Inst., Vollebekk, Norway.]

RACCOON, RINGTAIL, COATI

Folk, G. Edgar, Jr., Karen B. Coady, and Mary A. Folk. PHYSIOLOGICAL OBSERVATIONS ON RACCOONS IN WINTER. *Iowa Acad. Sci.* 75: 301-305,] figs. 1968. *WR 139: 43*

[Univ. Iowa, Iowa City.] Abstract: Body temperatures were recorded earlier from raccoons tethered outdoors in extreme cold. There was no suppression in body temperature. Later, two events suggested a new study, this time on heart rates: (1) the development of implantable radio-capsules for heart rate and EKG, and (2) the information that bears develop a bradycardia in the winter den, slowing sleeping heart rates from 40 b/m to 8-15 b/m. Three raccoons were studied periodically in outdoor dens in midwinter with Iowa implanted radio-capsules. Unlike the bears, when the raccoons stayed indoors for several days

due to severe weather, their sleeping heart rates went up instead of down. The explanations may be: (1) they were yearling raccoons, and (2) the winter was unusually mild. The experiment will be repeated with older animals.

Grau, Gerald A., Glen C. Sanderson, and John P. Rogers. AGE DETERMINATION OF RACCOONS. *J. Wildl. Mgmt.* 34(2): 364-372, 7 figs. Apr. 1970. *WR 139: 44*
[Mo. Coop. Wildl. Res. Unit, Columbia.] Abstract: Age criteria, based on 61 skulls and eye lenses from 103 known-age captives, are described for separating raccoons *(Procyon lotor)* into eight age-classes as follows: young-of-the-year, 1, 2, 3, 4, 5, 6-7, >7 years. Criteria studied were eye lens nitrogen, cranial suture closure, tooth wear, and incisor cementum layers. Lens nitrogen increased rapidly up to 12 months of age, but at much reduced rate thereafter. Total lens nitrogen was useful only in separating young-of-the-year from adults. The closure sequence for five cranial sutures accurately divided the total known-age sample of males into seven groups, and the adults into five groups. The tooth wear criteria divided the known-age sample into five relative age groups, but aging of individuals by this method was inaccurate. Histological sectioning of known-age teeth was the best method of observing layering in the cementum tissue. The technique of basing estimation of age on cementum ring counts, although subjective, was accurate for aging individuals through their fourth year but tended to underestimate the age of animals over 4 years old. However, suture closure or tooth wear can be used to identify males over 4 years old. In field studies, technical difficulties limit the utility of age estimation by cementum layers. Maximum root thickness of the lower canine was accurate in determining the sex of individuals from 5 months to at least 48 months of age.

Janzen, Daniel H. ALTRUISM BY COATIS IN THE FACE OF PREDATION BY *BOA CONSTRICTOR*. *J. Mammal.* 51(2): 387-389, 1 fig. May 1970. *WR 139: 44*
[Univ. Chicago, Chicago, Ill.] *"Nasua narica."*

Urban, David. RACCOON POPULATIONS, MOVEMENT PATTERNS, AND PREDATION ON A MANAGED WATERFOWL MARSH. *J. Wildl. Mgmt.* 34(2): 372-382, 3 figs. Apr. 1970. *WR 139: 44*
[Southern Ill. Univ., Carbondale.] Abstract: Populations, movement patterns and denning of raccoons *(Procyon lotor)*, and relationships between raccoons and nesting waterfowl were studied on a managed waterfowl marsh on western Lake Erie. Density of raccoons per square mile was estimated to be 45.3. Nine raccoons were instrumented with radio transmitters to determine movements, home ranges, and denning habits. These animals were radio-tracked 87 nights during fall and spring. The average home range included 119.6 acres but varied greatly depending on sex and age-class. Eighty-seven percent of the average home range was marsh, 8 percent woodlot, 4 percent wet meadows, and 1 percent farmland. During nocturnal hours, raccoons spent more time in the marsh than in the vicinity of the dikes. Females frequented wooded areas more than males. Seventy-three percent of all raccoon activity occurred in shallow water areas. Raccoons did not change their movements during the waterfowl nesting season as compared to other times of the year. There was no evidence of an influx of raccoons into the marsh from surrounding areas during the waterfowl nesting season. Muskrat *(Ondatra zibethica)* houses were used extensively as dens by 89 percent of the radio-tagged raccoons. Of 64 waterfowl nests found on the dikes of the study area during the 1967 and 1968 nesting seasons, only one was successful. Raccoons terminated 39 percent of the dike nests.

MUSTELIDS

Birnbaum, C., R. Gabler, J. Hartung, E. Schimke, and U. D. Wenzel. HALOTHAN-NARKOSE BEI MUSTELIDEN. [HALOTHANE ANAESTHESIA IN THE MUSTELIDAE.] *Arch. Exp. Veterinaermed.* 23(3): 561-565, illus. 1969. [From Biol. Abstr. 51(9), 1970. In German with Russian and English summ.] *WR 139: 44*
[Karl-Marx-Univ., Leipzig, Germany.]

Buchanan, G. Dale. REPRODUCTION IN THE FERRET *(MUSTELA FURO)*: II. CHANGES FOLLOWING OVARIECTOMY DURING EARLY PREGNANCY. *J. Reprod. & Fert.* 18(2): 305-316, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 45*
[Med. Coll. Ohio, Toledo.]

Chichikin, Yu. N. [THE ECOLOGY AND ECONOMIC IMPORTANCE OF THE BADGER IN THE SOUTH OF KIRGIZIYA.] *Trudy Sary.-Chelekskogo Gos. Zapoved.* 3: 109-120. 1968. [From Biol. Abstr. 51(3), 1970, from Referat. Zhur., Biol., 1969, no. 51569. Transl. of Russian abstr.] *WR 139: 45*

Creutz, Gerhard. DER FISCHOTTER *(LUTRA LUTRA* [L.]*)* IN DER OBERLAUSITZ. [THE OTTER *(LUTRA LUTRA* [L.]*)* IN OBERLAUSITZ.] *Abh. Ber. Naturkundemus Goerlitz* 42 (5): 1-7. 1967. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 45*
[Deut. Akad. Landwirtschaftswiss., Berlin, Germany.]

Crichton, V. J., and R. E. Urban. *DIOCTOPHYME RENALE* (GOEZE, 1782) (NEMATODA: DICTOPHYMATA) IN MANITOBA MINK. *Canadian J. Zool.* 48(3): 591-592. May 1970. *WR 139: 45*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: An examination of 246 mink, *Mustela vison* Schreber, from both southeast and southwest Manitoba, showed *Dioctophyme renale* in three animals from the former area but none in the latter. This is the first record of *D. renale* from wild mammals in Manitoba.

Fog, Mette. STUDIES ON THE WEASEL *(MUSTELA NIVALIS)* AND THE STOAT *(MUSTELA ERMINEA)* IN DENMARK. *Danish Rev. Game Biol.* 6(1): 1-14, 10 figs. 1969. In English with Danish summ. *WR 139: 45*
Trappings were made at various localities using common tip up traps without bait. From analysis of collections of 85 stoats and 114 weasels, it was concluded that both animals were distributed throughout the country with weasels appearing in more abundance than thought before. Aging was done by five methods: body weight, crista sagittalis development, humerous development, os penis development and skull length. Notes on population distribution and molting are included.

Gerell, Rune. ACTIVITY PATTERNS OF THE MINK *MUSTELA VISON* SCHREBER IN SOUTHERN SWEDEN. *Oikos* 20(2): 451-460, illus. 1969. [From Biol. Abstr. 51 (8), 1970. In English with Russian summ.] *WR 139: 45*
[Univ. Lund, Lund, Sweden.]

Grakov, N. N. THE SEX AND AGE STRUCTURE AND INCREMENT OF THE POPULATION OF THE PINE MARTEN. *Sbornik Tr. Vses. Nauch.-Issled. Zhivotn. Syr'ya Pushniny* 22: 3-18. 1969. [From Biol. Abstr. 51(1), 1970, from Referat. Zhur., Biol., 1969, no. 61564. Transl. of Russian abstr.] *WR 139: 45*

Heidt, Gary A. THE LEAST WEASEL *MUSTELA NIVALIS* LINNAEUS DEVELOPMENTAL BIOLOGY IN COMPARISON WITH OTHER NORTH AMERICAN *MUSTELA*. *Publ. Mus. Mich. State Univ., Biol. Ser.* 4(7): 227-282, 8 figs., 6 pls. 17 Apr. 1970. *WR 139: 45*

Heidt, Gary A., and Jane N. Huff. ONTOGENY OF VOCALIZATION IN THE LEAST WEASEL. *J. Mammal.* 51(2): 385-386, 1 fig. May 1970. *WR 139: 45*
[Mich. State Univ., East Lansing.] *"Mustela nivalis."*

Müller-Using, D. DIE BEDEUTUNG VON *(MUSTELA NIVALIS)* FÜR DAS NIEDERWILD. [THE SIGNIFICANCE OF THE WEASEL *(MUSTELA NIVALIS)* TO SMALL GAME.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 55-57. 1965. In German with English summ. *WR 139: 45*
[Inst. Jagdkunde, Schloss, Germany.]

MUSTELIDS--Continued

Nicht, M. EIN BEITRAG ZUM VORKOMMEN DES STEINMARDERS, *MARTES FOINA* (ERXLEBEN, 1770), IN DER GROSSTADT (MAGDEBURG). [ON THE OCCURRENCE OF MARTENS *(MARTES FOINA*, ERXL. 1770) IN THE CITY OF MAGDEBURG.] *Z. Jagdwiss.* 15(1): 1-6. 1969. [From Biol. Abstr. 51(11), 1970. In German with English and French summ.] *WR 139: 46*
[Biol. Inst. Med. Akad., Magdeburg, Germany.]

Romanov, A. N. [FEATURES OF THE BIOLOGY AND HUNTING OF THE PINE MARTEN IN THE TIMAN FORELAND.] *Sbornik Tr. Vses. Nauch.-Issled. Zhivotn. Syr'ya Pushniny* 22: 271-273. 1969. [From Biol. Abstr. 51(1), 1970, from Referat. Zhur., Biol., 1969, no. 6I379. Transl. of Russian abstr.] *WR 139: 46*

Skoog, Perarvid. THE FOOD OF THE SWEDISH BADGER, *MELES MELES* L. *Viltrevy* 7(1): 1-120, 20 figs. 1970. In English with long Swedish summ. *WR 139: 46*
The feeding period, primary and secondary food sources as well as winter foods are discussed. An extensive comparison was made between this and three Scandinavian and three Russian papers on the food of the badger, pointing to possible reasons for discrepancies among these papers.

Storm, G. L., and Glen C. Sanderson. RESULTS OF A FIELD TEST TO CONTROL STRIPED SKUNKS WITH DIETHYLSTILBESTOL. *Trans. Ill. State Acad. Sci.* 62(2): 193-197. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 46*
[Ill. Nat. Hist. Surv., Urbana.]

Thompson, James N., Jr., and Richard L. Gilstrap. PLANT SPECIFICITY IN STRIPED SKUNK DIGGINGS. *Southwestern Nat.* 15(1): 135. 1 June 1970. *WR 139: 46*
[Univ. Okla., Norman.] "More than 160 diggings of the striped skunk *(Mephitis mephitis)* were observed at the base of sunflowers, *Helianthus petiolaris*, in a 900 sq. yd. study area." Diggings followed the taproots to a depth of from 2 to 6 inches. There were no diggings at the other plants in the area.

DOGS, WOLVES, FOXES

Berns, Vernon D. NOTES ON THE BLUE FOX OF RAT ISLAND, ALASKA. *Canadian Field-Nat.* 83(4): 404-405. Oct.-Dec. 1969. *WR 139: 46*
[Kodiak Natl. Wildl. Refuge, Kodiak, Alaska.] "Whelping, feeding, movement, and population studies on an undisturbed Aleutian Island."

Fairley, J. S. THE FOX AS A PEST OF AGRICULTURE. *Irish Nat. J.* 16(8): 216-219. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 46*
[Univ. Coll., Galway, Ireland.]

Fox, M. W. A COMPARATIVE STUDY OF THE DEVELOPMENT OF FACIAL EXPRESSIONS IN CANIDS: WOLF, COYOTE AND FOXES. *Behaviour* 36(1-2): 49-73, 17 figs. 1970. In English with French summ. *WR 139: 46*
[Washington Univ., St. Louis, Mo.] Summary: The development of facial expressions in the wolf, coyote and grey fox is described, and facial expressions of these species also compared with the red and Arctic fox. In the various species of fox, which lack the high degree of social organization of the wolf, facial expressions are clearly identified under different motivational or social situations, associated with an increase or decrease of social distance. These same expressions are seen in the coyote and in the wolf (with the exception of the jaw-gape which is not seen to the same degree in the wolf). The wolf, coyote and domesticated dog differ from the foxes in that they manifest a wider range of simultaneous combinations of various facial expressions. This may indicate an evolutionary advancement of visual signals in more social species. During ontogeny in these latter species, the more "primitive" facial expressions common to the foxes were seen earlier than other expressions, simultaneous combinations thereof, and more complex social behavior patterns which emerged later in life. These later emerging components may be phylogenetically more

recently acquired than those patterns which are common to both the foxes and other canids. These findings are correlated with the social behavior and organization of these various canids and are closely compared with other studies of the facial expressions of primates. The contribution of specific facial markings and of body movements associated with different facial expressions are considered.

Golani, Ilan. THE GOLDEN JACKAL. *The Movement Notation Soc.* (Tel Aviv, Israel). 124 p., illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 47*
"Canis aureus."

Hasegawa, Megumi. [ON THE ROLE OF FOXES IN *ECHINOCCOSIS MULTILOCULARIS* IN HOKKAIDO.] *Rep. Hokkaido Inst. Pub. Health* 19: 26-91. 1969. [From Biol. Abstr. 51(3), 1970. In Japanese with English summ.] *WR 139: 47*
[Hokkaido Inst. Pub. Health, Sapporo, Hokkaido, Japan.]

Korytin, S. A., and M. D. Azbukina. [VARIATION WITH SEASON AND SEX IN THE REACTION OF FOXES TO ODORS.] *Sbornik Trudy Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny* 22: 223-234. 1969. [From Biol. Abstr. 51(2), 1970, from Referat. Zhur., Biol., 1969, no. 6I497. Transl. of Russian abstr.] *WR 139: 47*

Laughrin, Lyndal. SAN JOAQUIN KIT FOX / ITS DISTRIBUTION AND ABUNDANCE. *Calif. Dept. Fish & Game Wildl. Mgmt. Branch Admin. Rept.* no. 70-2. 20 p., 3 figs. Feb. 1970. *WR 139: 47*
[The Resources Agency, Sacramento, Calif.] The San Joaquin kit fox, *Vulpes macrotis mutica*, occurs in the San Joaquin Valley from the Tehachapi Mountain foothills north to Los Banos. Population density varies from one fox per square mile to one fox per 2.8 square miles, with total population numbering between 1,000-3,000 foxes. The population is assumed to be declining with the conversion of suitable native habitat to agricultural and industrial use.--From abstr.

Liu, I. K. M. THE ROLE OF THE COYOTE IN AN INFECTION OF MAN AND ANIMALS. *Proc. 4th Vertebrate Pest Conf.* p. 23-24. 1970. *WR 139: 47*
[Calif. Dept. Agr., Sacramento.] See Dana, *WR 139: 16.*

Mech, L. David. THE WOLF: THE ECOLOGY AND BEHAVIOR OF AN ENDANGERED SPECIES. *Natural History Press* (Garden City, N.Y.). xvi + 384 p., 54 figs., 6.25 x 9.5 in. 1970. Price $9.95. *WR 139: 47*
This, the first book to attempt a complete account of the biology of the wolf, draws from field research and upon the rich literature from two continents. Contents: The wolf itself; Wolf society--packs and populations; Social order, expression, and communication; Reproduction and family life; The wolf's wanderings; Food habits; Hunting habits; Selection of prey; Effects of wolf predation; Relations with nonprey species; Factors harmful to the wolf; and Future of the wolf.

Myrberget, Svein. DEN NORSKE BESTAND AV ULV, *CANIS LUPUS* (L.). [THE NORWEGIAN POPULATION OF WOLF, *CANIS LUPUS* (L.).] *Meddelelser Statens Viltundersokelser Pap. Norwegian State Game Res. Inst.* 2(32): 3-17, illus. 1969. [From Biol. Abstr. 51(9), 1970. In Norwegian with English summ.] *WR 139: 47*
[Norwegian State Game Res. Inst., Vollebekk, Norway.]

Surdan, C., N. Draganescu, V. Gheorghiu, and A. Enache. BOVINE RABIES ENZOOTIC TRANSMITTED BY FOXES. *Rev. Roum. Inframicrobiol.* 6(1): 75-82, illus. 1969. [From Biol. Abstr. 51(4), 1970.] *WR 139: 47*
[Inst. Inframicrobiol., Acad. Soc. Repub. Rom., Bucharest, Romania.]

Villemin, Martial. À PROPOS DE LA RAGE EN MOSELLE. LA DESTRUCTION DU RENARD EST-ELLE NÉCESSAIRE? [CONCERNING RABIES IN MOSELLE. IS THE DESTRUCTION OF THE FOX NECESSARY?] *Bull. Acad. Soc. Lorraines Sci.* 8(1): 13-20. 1969. [From Biol. Abstr. 51(2), 1970. In French.] *WR 139: 47*

BIG GAME, GENERAL

Ahlen, Ingemar. A COMPARISON BETWEEN THE WINTER FEEDING BEHAVIOUR OF THE RED DEER AND THE MOOSE. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 117-126, 2 figs. 1965. In English with French and German summ. *WR 139: 48*
[Zool. Inst., Lunds Univ., Lund, Sweden.]

Aitken, Russell Barnett. GREAT GAME ANIMALS OF THE WORLD. *Macmillan Company* (New York). 192 p., illus., 11.5 x 12.5 in. 1969. Price $22.50. *WR 139: 48*
"This comprehensive and beautiful pictorial record of the great game animals of the world offers to sportsman and animal lover alike one of the most exciting and colorful books on animals ever published. Written and illustrated by one of the world's greatest living big-game hunters, an outstanding authority on Africa and a master of the camera, this volume includes close-up views of animals in Africa, Asia, Europe, North and South America, and the Arctic regions, including many rarely caught by photographers. Illustrated with more than 100 photographs in full color and more than 120 monochrome photos."

Basson, P. A., and F. Zumpt. *OESTRUS DUBITATUS* N. SP. FROM THE NASAL CAVITIES OF THE BLUE WILDEBEEST *(CONNOCHAETES TAURINUS* BURCHELL, 1823*)* IN THE ETOSHA NATIONAL PARK, SOUTH WEST AFRICA. *Madoqua* no. 1. p. 57-60, 3 figs. 1969. *WR 139: 48*
[Vet. Res. Inst., Onderstepoort, South West Africa.] Abstract: During a survey of nasal larvae an unidentified third instar was found in the nasal cavities of a blue wildebeest. It was characterized by heavy dorsal and ventral spinulation and is introduced as a new species *Oestrus dubitatus.*

Berge, Frode. TAKSERINGSMETODER FOR RADYR, *CAPREOLUS CAPREOLUS* (L.). [CENSUS METHODS FOR ROE DEER, *CAPREOLUS CAPREOLUS* (L.).] *Meddelelser Statens Viltundersokelser Pap. Norwegian State Game Res. Inst.* 2(30): 3-45, illus. 1969. [From Biol. Abstr. 51(11), 1970. In Norwegian with English summ.] *WR 139: 48*
[Norwegian State Game Res. Inst., Vollebekk, Norway.]

Blood, Donald A., Donald R. Flook, and William D. Wishart. WEIGHTS AND GROWTH OF ROCKY MOUNTAIN BIGHORN SHEEP IN WESTERN ALBERTA. *J. Wildl. Mgmt.* 34(2): 451-455, 4 figs. Apr. 1970. *WR 139: 48*
[Saskatchewan Dept. Nat. Resources, Saskatoon, Canada.]

Borg, Karl. ON MORTALITY AND REPRODUCTION OF ROE DEER IN SWEDEN DURING THE PERIOD 1948-1969. *Viltrevy* 7(2): 121-149, 23 figs. 1970. In English with Swedish summ. *WR 139: 48*
[Natl. Veterinary Inst., Stockholm, Sweden.] Of 2,827 roe deer *(Capreolus capreolus* L.*)* picked up dead in the field, 42.7% were juvenile, 45.8% adult and 11.5% "old" animals. Among fawns (included in the age-group juveniles), females were more numerous than males (44.4 males : 55.6 females); in the other age groups, however, males were dominant, particularly in the adults (61.9 males : 38.1 females). Three principal causes of death were found during the investigation, viz. *inanition* (malnutrition), *traumatic injuries* (including predation) and *diseases.* Reproduction was studied, and numbers of embryos and corpora lutea of pregnancy were used to measure fertility. The mean number of embryos per pregnant doe was highest in the 3-5-year-old animals, 2.35, although almost as high in the 2-year-olds, 2.23. A decrease in fertility correlated with increasing age was observed. The average number of embryos per pregnant doe was 2.19.--From summ.

Broughton, E., and L. P. E. Choquette. ADDITIONAL INFORMATION AND COMMENTS ON DISEASE CONDITIONS AND PARASITES OF BARREN-GROUND CARIBOU. *Trans. 33rd Federal-Provincial Wildl. Conf. (Edmonton, Alberta) 8-10 July 1969.* p. 30-39. 1969. *WR 139: 48*
"In conclusion, field observations and results of post-mortem and laboratory examinations suggest that the health status of the Kaminuriak barren-ground caribou population is generally good at this time. However, further investigations are certainly warranted to assess the significance of conditions such as brucellosis, verminous pneumonia, and besnoitiosis in caribou."

Brüggemann, J., D. Giesecke, and K. Kürst. UNTERSUCHUNGEN AM PANSENINHALT VON REH- UND ROTWILD. [INVESTIGATIONS OF RUMEN CONTENTS OF ROE DEER AND RED DEER.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 139-144. 1965. In German with English summ. *WR 139: 49*
[Veterinärst 13, Munich, Germany.]

Bubenik, Anton B. DAS GEWEIH / ENTWICKLUNG, AUFBAU UND AUSFORMUNG DER GEWEIHE UND GEHÖRNE UND IHRE BEDEUTUNG FÜR DAS WILD UND FÜR DIE JAGD. [THE ANTLER (DEVELOPMENT, FORMATION, AND SHAPE OF ANTLERS AND HORNS) AND ITS SIGNIFICANCE TO GAME AND HUNTING.] *Verlag Paul Parey* (Hamburg & Berlin). 214 p., 215 figs., 7 x 9.75 in. 1966. In German. *WR 139: 49*
A monograph on antlers with an impressive bibliography. Contents: The suborder Pecora of Linnaeus; nature, growth and shedding of antlers; characteristics of tropism in antlers; physiological maintenance of Cervidae; antler anomolies; the mechanics of development and the biological interpretation of antlers; and the role of antlers in the protection of Cervidae.

Bubenik, A. B., and P. Casnocha. DIE NUTZUNG DER UMWELT DURCH DAS ROTWILD *(CERVUS ELAPHUS L.).* [THE UTILIZATION OF THE ENVIRONMENT BY THE RED DEER *(CERVUS ELAPHUS).*] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 175-199, [8] figs. 1965. In German with English summ. *WR 139: 49*

Caughley, Graeme. ERUPTION OF UNGULATE POPULATIONS, WITH EMPHASIS ON HIMALAYAN THAR IN NEW ZEALAND. *Ecology* 51(1): 53-72, 5 figs. Winter 1970. *WR 139: 49*
[Univ. Sydney, Sydney, Australia.] The major influence on the rate of increase of Himalayan thar *(Hemitragus jemlahicus)* was the mortality rate in the first year of life.--Courtesy/ Paul A. Stewart.

Chapman, D. I., and Norma Chapman. OBSERVATIONS ON THE BIOLOGY OF FALLOW DEER *(DAMA DAMA)* IN EPPING FOREST, ESSEX, ENGLAND. *Biol. Conserv.* 2(1): 55-62. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 49*
[Equine Res. Sta., Newmarket, Suffolk, England.]

Chapman, D. I., and Norma G. Chapman. PRELIMINARY OBSERVATIONS ON THE REPRODUCTIVE CYCLE OF MALE FALLOW DEER *(DAMA DAMA L.). J. Reprod. & Fert.* 21(1): 1-8, illus. 1970. [From Biol. Abstr. 51(12), 1970.] *WR 139: 49*
[Equine Res. Sta., Newmarket, Suffolk, England.]

Chapman, Donald I., and Norma Chapman. DEVELOPMENT OF THE TEETH AND MANDIBLES OF FALLOW DEER. *Acta Theriologica* 15(7): 111-131, 3 figs. 1970. In English with Polish summ. *WR 139: 49*
[Equine Res. Sta., Newmarket, Suffolk, England.] Abstract: Fallow deer, *Dama dama* (Linnaeus, 1758) have a diphyodont dentition comprising 20 deciduous and 32 permanent teeth. The best estimate of age is obtained by assuming a common date of birth and using the stage of tooth development only to decide the year group. The method is only applicable up to 3 years of age. Above that age the specimens are divided into arbitrary groups on the basis of the degree of wear of the third molar. The order of eruption of the permanent teeth is M_1, I_1, M_2, I_2, I_3, C, M_3, P_4, (P_3, P_2). The permanent molars start erupting at about 3 months and finish by 21-24 months although the third molar is not completely functional until 30 months. The permanent premolars start erupting at 17-20 months and are complete by 25-26 months whereas the permanent incisiform teeth start at about 7 months and finish at 17-20 months. The mandibles reach their maximum size by about 30 months although in males the diastema continues to grow after this time. The variation in size of mandibles both in and between populations is discussed.

420-877 O - 71 - 4

Child, Graham, and J. D. LeRiche. RECENT SPRINGBOK TREKS (MASS MOVEMENTS) IN SOUTH-WESTERN BOTSWANA. *Mammalia* 33(3): 499-504, 1 fig. Sept. 1969. In English with French summ. *WR 139: 50*

[Dept. Wildl. & Natl. Parks, Botswana.] Summary: Two springbok treks in 1946 and 1950 in south-western Botswana and neighbouring parts of the Cape Province of Southern Africa are described and compared with historical reports of this mass movement phenomenon. Possible biological implications are discussed.

Child, Graham, and Wolfgang von Richter. OBSERVATIONS ON ECOLOGY AND BEHAVIOUR OF LECHWE, PUKU AND WATERBUCK ALONG THE CHOBE RIVER, BOTSWANA. *Z. Säugetierk.* 34(5): 275-295, 6 figs. 1969. In English with German summ. *WR 139: 50*

[Dept. Wildl. & Natl. Parks, Botswana.] A comparative study of *Kobus leche, K. vardoni,* and *K. ellipsiprymnus* was made. Ecological requirements and gross behavior patterns of the antelope were analysed to determine the similarities and differences which may occur in the three closely related species using the same ground. It was suggested that changes in habitat, resulting from past land use, have been beneficial for waterbuck and detrimental to lechwe populations, and that limitations of flood season habitat may have restricted the growth of the puku population.--From summ.

Cumming, H. G. CERVIDAE AND LAND USE IN ONTARIO. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 167-173. 1965. In English with German summ. *WR 139: 50*

Dasmann, Raymond F. BIOMASS, YIELD, AND ECONOMIC VALUE OF WILD AND DOMESTIC UNGULATES. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 227-235. 1965. In English with German summ. *WR 139: 50*

[Humboldt State Coll., Arcata, Calif.]

De Beaufort, Francoise. LES GRANDS MAMMIFÈRES EN BRETAGNE. PROBLEMES CYNÉGÉTIQUES ET BIOLOGIQUES. [LARGE MAMMALS IN BRITTANY. PROBLEMS RELATED TO HUNTING AND BIOLOGY (DEER, CONSERVATION).] *Penn Ar Bed* 6(53): 281-287, illus. 1968. [From Biol. Abstr. 51(2), 1970. In French.] *WR 139: 50*

[Mus. Natl. Hist. Nat., Paris, France.]

Desmeules, Pierre, and Joan Heyland. CONTRIBUTION TO THE STUDY OF THE FOOD HABITS OF CARIBOU. I. LICHEN PREFERENCES. *Nat. Can.* 96(3): 317-331, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 50*

[Quebec Wildl. Serv., Quebec, Canada.]

Desmeules, Pierre, and Joan Heyland. CONTRIBUTION TO THE STUDY OF THE FOOD HABITS OF CARIBOU. II. DAILY CONSUMPTION OF LICHENS. *Nat. Can.* 96(3): 333-336. 1969. [From Biol. Abstr. 51(11), 1970. In English with French summ.] *WR 139: 50*

[Quebec Wildl. Serv., Quebec, Canada.]

de Vos, A. ECOLOGICAL CONDITIONS AFFECTING THE PRODUCTION OF WILD HERBIVOROUS MAMMALS ON GRASSLANDS. Reprint from Advances in Ecological Research Volume [VI]. *Academic Press Inc.* (London). p. 137-182, 2 figs. [1969.] *WR 139: 50*

[Forestry & Forest Industries Div., FAO, Rome, Italy.] In addition to introductory sections on basic ecology, definitions and descriptions of grasslands and savannahs, there are sections entitled: The ecology of drought cycles, The ecology of fire, Animal influences on the grassland environment, Biomass and energy production of herbivorous mammals, Management considerations, and Recommendations and research.

Drewek, John, Jr. POPULATION CHARACTERISTICS AND BEHAVIOR OF INTRODUCED BIGHORN SHEEP IN OWYHEE COUNTY, IDAHO. *M.S. thesis, Univ. Idaho.* 46 p. 1970. *WR 139: 51*

Dzieciołowski, Ryszard. FOODS OF THE RED DEER AS DETERMINED BY RUMEN CONTENT ANALYSES. *Acta Theriologica* 15(6): 89-110. 1970. In English with Polish summ. *WR 139: 51*

[Forestry Res. Inst., Wery Kostrzewy 3, Warsaw, Poland.] Abstract: The composition of red deer *(Cervus elaphus* Linnaeus, 1758*)* diet was analyzed on the basis of 110 rumen samples collected in three forest environments of lowland Poland during autumn and winter, 1964 to 1968. Of the 49 plant species found in deer rumens there were 11 trees, 8 shrubs, 4 dwarfshrubs, 5 grasses, sedges, and rushes, 4 mosses, 1 lichen, 2 ferns, 1 horsetail and 13 dicotyledonous forbs. Distinct differences were found between the composition of autumn (September-November) and winter (December-February) diets. The winter diet was characterized by a low diversity and a remarkable predominance of browse. No marked variations were noted in the diet of calves, hinds, and stags, but there were differences in food selection among the environments. The consumption of Scotts pine *(Pinus silvestris* L.*)* bark was a common phenomenon. The five most important food plants of red deer were *Pinus silvestris, Juniperus communis, Calluna vulgaris, Salix cinerea,* and *Vaccinium myrtillus.* They are suggested as indicator plants concerning the status and developmental trends of habitat.

Ebedes, H. NOTES ON THE IMMOBILISATION OF GEMSBOK *(ORYX GAZELLA GAZELLA)* IN SOUTH WEST AFRICA USING ETORPHINE HYDROCHLORIDE (M-99). *Madoqua* no. 1. p. 35-45, 2 figs. 1969. *WR 139: 51*

[Etosha Natl. Park, Okaukuejo, South West Africa.] Of 64 gemsbok darted, 75% were satisfactorily immobilized; 52% were immobilized and captured within 15 minutes. Mortality was low excepting in cases when the animals were chased for long distances or ran long distances because of poor absorption of the drugs. The narcotic effect of etorphine hydrochloride was successfully reversed with nalorphine hydrobromide or cyprenorphine hydrochloride (M-285).--From summ.

Espmark, Yngve. MOTHER-YOUNG RELATIONS AND DEVELOPMENT OF BEHAVIOUR IN ROE DEER *(CAPREOLUS CAPREOLUS* L.*). Viltrevy* 6(6): 461-540. 1969. In English with long Swedish summ. *WR 139: 51*

[Univ. Stockholm, Stockholm, Sweden.] Notes on observations pertaining to fawning, activities of mother and fawn following birth, development of contact behavior, play behavior, territorial behavior, and aggressive behavior. Discussion is presented in sequence of the developing behavior traits.

Fil', V. I. [NUMBER AND DISTRIBUTION OF THE MARAL *(CERVUS ELAPHUS)* IN KAZAKHSTAN.] *Zool. Zhur.* 48(10): 1552-1557. 1969. [From Biol. Abstr. 51(9), 1970. In Russian with English summ.] *WR 139: 51*

[All-Union Res. Inst. Anim. Raw Mater. Furs, Alma-Ata, USSR.] Caspian deer.

Flook, Donald R. CAUSES AND IMPLICATIONS OF AN OBSERVED SEX DIFFERENTIAL IN THE SURVIVAL OF WAPITI. *Canadian Wildl. Serv. Rept. Ser.* no. 11. 71 p., 23 figs. 1970. Price $1.25. *WR 139: 51*

The sex ratio of fetuses from all parks in winter was 113 males : 100 females, and losses of males did not appear greatly to exceed those of females before 1.5 years of age. During the rut adult males rapidly depleted their stored fat, in contrast to females, which did not. Mature males entered the winter period with smaller fat reserves, exhausting the reserves earlier than females, and becoming more vulnerable than females to death in late winter and spring.--From abstr.

Goddard, John. MOVEMENTS OF MOOSE IN A HEAVILY HUNTED AREA OF ONTARIO. *J. Wildl. Mgmt.* 34(2): 439-445. Apr. 1970. *WR 139: 51*

[FAO, P.O. Box 37, Chipata, Zambia.] Abstract: Movements of tagged moose *(Alces alces)* were observed in a heavily hunted area of Ontario over an 8-year period. A principal objective of the study was to discover if moose disperse

or wander from remote, virtually unhunted regions and repopulate the heavily hunted areas which lie immediately along hunter access routes. A total of 318 swimming moose was marked, during the summer months, from a helicopter taxiing on the surface of lakes and waterways. A total of 71 observations was subsequently made of marked moose, including 33 records from known-age animals. Male and female moose of all ages are quite sedentary in summer habitat, and some were also sedentary in winter habitat within the study area. Movements between summer and winter range can extend over several miles. No evidence of a directional tendency from unhunted to hunted areas was observed. It is concluded that a sustained yield of the moose population within the heavily hunted area will probably depend more on an increased productivity of the resident survivors, than on dispersal and subsequent recruitment of moose from remote areas.

Henry, Vernon G. WEIGHTS AND BODY MEASUREMENTS OF EUROPEAN WILD HOGS IN TENNESSEE. *J. Tenn. Acad. Sci.* 45(1): 20-23. Jan. 1970. *WR 139: 52*
[Tenn. Game & Fish Comm., Nashville.] Abstract: Weights and body measurements were determined for European wild hogs in eastern Tennessee. Average measurements of adults in the fall were: whole weight--180 pounds for males and 155 pounds for females, ear length--141 mm, tail length--257 mm, hind foot length--281 mm, and total length--1661 mm. Maximum figures for some other measurements of adults in the fall were: shoulder height--864 mm, hip height--864 mm, skull length--432 mm, chest girth--1321 mm, and tusk length--121 mm. Average measurements of pen-reared pigs at birth were: weight--2.2 pounds, ear length--41.6 mm, tail length--61.5 mm, and hind foot length--77.8 mm.

Hornocker, Maurice G. AN ANALYSIS OF MOUNTAIN LION PREDATION UPON MULE DEER AND ELK IN THE IDAHO PRIMITIVE AREA. *Wildl. Monographs* no. 21. 39 p., 14 figs. Mar. 1970. *WR 139: 52*
[Univ. Idaho, Moscow.] The study was designed to (1) investigate the dynamics of a mountain lion population, and (2) to assess the impact of a population of lions on populations of big game animals. The lion population was stable during the 5 years it was studied. Intraspecific relationships, manifested through territoriality, acted to limit numbers of lions and maintain population stability. Dispersal and mortality of young individuals appeared to be important limiting mechanisms. The population was centered around a nucleus of mature individuals well established on territories. It was concluded that lions selected young elk, selected against mature bulls, and killed mule deer indiscriminately. Vulnerability of certain classes of prey ungulates was determined by different factors. These factors, acting separately or collectively to increase vulnerability, included prey density, behavior, age, health, inter- and perhaps intraspecific competition, and the lion's predatory characteristics. It was concluded that elk and deer populations were limited by the winter food supply, and that predation by lions was inconsequential in determining ultimate numbers of elk and deer. Predation by lions, however, is a powerful force acting to dampen and protract severe prey oscillations and to distribute ungulates on restricted, critical range. From the theoretical standpoint, predation also appears to be a strong evolutionary force, acting to remove less fit individuals from the population. The effects and influence of such predation are considered of great significance in the maintenance of ecologic stability in a wilderness environment.--From summ.

Houston, Douglas B. IMMOBILIZATION OF MOOSE WITH M_{99} ETORPHINE. *J. Mammal.* 51(2): 396-399. May 1970. *WR 139: 52*
[Natl. Park Serv., Moose, Wyo.] *"Alces alces shirasii."*

Jaczewski, Z., L. Zaniewski, and W. Zurowski. OBSERVATIONS ON THE CIRCULATION IN THE PEDICLE ARTERIES OF RED DEER *(CERVUS ELAPHUS L.). Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 145-155, 10 figs. 1965. In English. *WR 139: 52*
[Lab. Game Animals Physiol., Polish Acad. Sci., Popielno, Poland.]

XUM

Jansen, J., Jr. SOME PROBLEMS RELATED TO THE PARASITE INTER-RELATIONSHIP OF DEER AND DOMESTIC ANIMALS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 127-132. 1965. In English with French and German summ. *WR 139: 53*

[State Univ., Utrecht, Netherlands.] "Roe, red, and fallow deer, cattle, sheep and goat."

Kostron, Karel, and Josef Hromas. [BIONOMICS OF GAME-PRESERVE ROES IN THE SOKOLNICE PHEASANT-RUN III.] *Sbornik Vys. Sk. Zemed. Brne Rada C Spisy Fak. Les.* 4: 359-374, illus. 1966. [From Biol. Abstr. 51(2), 1970. In Russian with German summ.] *WR 139: 53*

Kotrly, A. DOMMAGES CAUSES PAR L'ECORCAGE EN RAPPORT AVEC LES HELMENTHIASES. [DAMAGE CAUSED BY PEELING IN RELATION TO HELMINTHIASIS.] *7th Congres Biol. Gibier Belgrade-Ljubljana Sept. 1965.* p. 429-432. 1967. In French with English summ. *WR 139: 53*

In conclusion, it may therefore be assumed that the occurrence of helminthiasis in deer does not influence the extent of peeling injuries.--From summ.

Kutzer, E., and H. K. Hinaidy. DIE PARASITEN DER WILDLEBENDEN WIEDERKAUER ÖSTERREICHS. [PARASITES OF WILD RUMINANTS IN AUSTRIA.] *Z. Parasitenk.* 32(4): 354-368, illus. 1969. [From Biol. Abstr. 51(8), 1970. In German with English summ.] *WR 139: 53*

[Tierarztlichen Hochsch., Vienna, Austria.]

Lochman, J., and A. Barth. INFLUENCE DE LA STRUCTURE DES ALIMENTS SUR LA DIGESTION DES CERVIDES. [INFLUENCE OF FODDER STRUCTURE ON DIGESTION OF CERVIDAE.] *7th Congres Biol. Gibier Belgrade-Ljubljana Sept. 1965.* p. 231-234. 1967. In French with English summ. *WR 139: 53*

Logsdon, Heywood Stevan. USE OF DRUGS AS A CAPTURE TECHNIQUE FOR DESERT BIGHORN SHEEP. *Ph.D. thesis, Colo. State Univ.* 190 p. 1969. [From Dissertation Abstr. 30(10B), 1970.] *WR 139: 53*

Studies were made to find a safe, effective capture technique by drugs. M-99 was most effective for capturing sheep. The average distance traveled before capture was 196.3 yards. Mortality was due to falling in precipitous terrain, and in one case from shock and/or drug effects. Diazepam was ineffective in capturing free-ranging bighorn sheep.

Longhurst, W. M., N. F. Baker, G. E. Connolly, and R. A. Fisk. TOTAL BODY WATER AND WATER TURNOVER IN SHEEP AND DEER. *Am. J. Veterinary Res.* 31(4): 673-677. Apr. 1970. *WR 139: 53*

[Univ. Calif., Davis.] Summary: The total body water and body water turnover in Columbian black-tailed deer *(Odocoileus hemionus columbianus)* and domesticated sheep *(Ovis aries)* were compared in winter and summer by testing with tritium oxide (TOH). There was a significant difference in water turnover in both species when data obtained in the winter were compared with those obtained in the summer. In addition, there was significant difference in water turnover between the 2 species in both winter and summer. Deer had a larger body water pool in relation to body weight than did sheep, but rate of body water turnover in deer was slower in both winter and summer. The mean body water pools of sheep in winter and in summer were 53.3 and 46.0% of body weight, respectively. Comparable values for deer were 63.4 and 73.5%. The water flux in sheep was 0.102 and 0.140 L./kg./day in winter and in summer, respectively. Comparable values in deer were 0.053 and 0.104 L./kg./day.

Mitchell, Brian. MEASURING THE PERFORMANCE OF STOCKS OF WILD RED DEER *(CERVUS ELAPHUS)* IN THE SCOTTISH HIGHLANDS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 163-166. 1965. In English with French and German summ. *WR 139: 53*

[Nature Conservancy, Aviemore, Inverness-shire, Scotland.]

Mohr, Erna. HALTUNG UND ZUCHT DES SCHOMBURGK-HIRSCHES *RUCERVUS SCHOMBURGKI* BLYTH, 1863. [KEEPING AND BREEDING OF THE SCHOMBURGK-DEER *RUCERVUS SCHOMBURGKI* BLYTH 1863.] *Zool. Gart.* 36(1-3): 34-57, illus. 1968. [From Biol. Abstr. 51 (7), 1970. In German.] *WR 139: 54*

Nüsslein, F. CERVIDEN UND LANDESKULTUR EINE EINFÜHRUNG. [CERVIDAE AND CULTIVATED LAND / AN INTRODUCTION.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 159-162. 1965. In German with English summ. *WR 139: 54*

O'Gara, Bart W. DERIVATION OF WHOLE WEIGHTS FOR THE PRONGHORN. *J. Wildl. Mgmt.* 34(2): 470-472. Apr. 1970. *WR 139: 54*
[Univ. Mont., Missoula.] Abstract: Manipulation of whole and partial weights of 133 pronghorns *(Antilocapra americana)* indicated that the approximate whole weights of adults and yearlings could be derived from partial weights with less than 2 percent error (95 percent confidence interval). Derivation of whole weights for fawns involved a maximum error of 7 percent.

Panin, V. Ya. [DECIPHERING THE DEVELOPMENTAL CYCLE OF *BICAULUS SAGITTATUS*, A PARASITE OF DEER.] *Izvest. Akad. Nauk Kaz. SSR Ser. Biol.* 1: 50-56, illus. 1967. [From Biol. Abstr. 51(8), 1970. In Russian.] *WR 139: 54*
[Acad. Sci. Kaz. SSR, Alma-Ata, USSR.]

Pielowski, Z. DIE WIEDEREINBURGERUNG DES ELCHES--*ALCES ALCES* (L.) IM KAMPINOS-NATIONALPARK IN POLEN. [REINTRODUCTION OF MOOSE *(ALCES ALCES* L.*)* IN THE KAMPINOS NATIONAL PARK IN POLAND.] *Z. Jagdwiss.* 15(1): 6-17, illus. 1969. [From Biol. Abstr. 51(11), 1970. In German with English and French summ.] *WR 139: 54*

Pimlott, Douglas H. INFLUENCE OF DEER AND MOOSE ON BOREAL FOREST VEGETATION IN TWO AREAS OF EASTERN CANADA. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 105-116, 1 fig. 1965. In English. *WR 139: 54*
[Univ. Toronto, Toronto, Ontario, Canada.]

Ritcey, R. W., and N. A. M. Verbeek. OBSERVATIONS OF MOOSE FEEDING ON AQUATICS IN BOWRON LAKE PARK, BRITISH COLUMBIA. *Canadian Field-Nat.* 83(4): 339-343. Oct.-Dec. 1969. *WR 139: 54*
[British Columbia Fish & Wildl. Branch, Kamloops, Canada.]

Sachs, R., and C. Sachs. A SURVEY OF PARASITIC INFESTATION OF WILD HERBIVORES IN THE SERENGETI REGION IN NORTHERN TANZANIA AND THE LAKE RUKWA REGION IN SOUTHERN TANZANIA. *Bull. Epizoot. Dis. Afr.* 16(4): 455-472, illus. 1968. [From Biol. Abstr. 51(1), 1970. In English with French summ.] *WR 139: 54*
[Univ. Coll., Nairobi, Kenya.]

Schäfer, E. REHWILD--BEWIRTSCHAFTUNG. [ROE DEER--MANAGEMENT.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 237-244. 1965. In German with English summ. *WR 139: 54*

Schenkel, Rudolf, and Lotte Schenkel-Hulliger. MAMMALIA DEPICTA. ECOLOGY AND BEHAVIOR OF THE BLACK RHINOCEROS *(DICEROS BICORNIS* L.*)*. A FIELD STUDY. *Paul Parey* (Berlin, Germany). 101 p., illus. 1969. [From Biol. Abstr. 51(1), 1970.] *WR 139: 54*

Serafiński, Włodzimierz. REPRODUCTION AND DYNAMICS OF MOOSE *(ALCES ALCES* L.*)* POPULATION IN THE KAMPINOS NATIONAL PARK. *Ekologia Polska--Ser. A* 17(37): 709-718, 3 figs. 1969. In English with Polish summ. *WR 139: 54*
[Res. Sta., Kampinos Natl. Park, Poland.] Abstract: On the base of 18 years long observations of moose *(Alces alces* L.*)* it was found that its population on the area of the Kampinos National Park was stabilized in numbers on the optimal level of some 105 individuals. Reproduction indicates no deviations from that

recorded in other European populations. Pregnancy lasts for 227-235 days. The number of caves per litter amounts to 1-2. Rut occurs between the 15th and 28th September. Calves are born in May, out of them 65% on May 1-7. Polygamy is a rule. The quantitative ratio between females and males is as 1:1 in newborns, while 1.3:1 in adult animals.

Simmons, Norman Montgomery. THE SOCIAL ORGANIZATION, BEHAVIOR, AND ENVIRONMENT OF THE DESERT BIGHORN SHEEP ON THE CABEZA PRIETA GAME RANGE, ARIZONA. *Ph.D. thesis, Univ. Ariz.* 169 p. 1969. [From Dissertation Abstr. 30(10B), 1970.] *WR 139: 55*

A study of the social organization and behavior of desert bighorn sheep, and the limiting effects of the environment of their behavior. Management recommendations were presented.

Simpson, C. David, and William H. Elder. TOOTH CEMENTUM AS AN INDEX OF AGE IN GREATER KUDU *(TRAGELAPHUS STREPSICEROS). Arnoldia* 4(20): 1-10, 3 figs. 30 June 1969. *WR 139: 55*

[Texas A&M Univ., College Station.] Thin sections of the root "boss" area of three teeth from each of 10 kudu jaws were cut so as to reveal the layering in the cementum. The known time required for kudu to acquire their first molar, canine and fourth premolar teeth provided a partial time scale and permitted valid correction factors to be applied to counts. Estimates of age and ages calculated using tooth annuli correlated closely with ages determined from eye lens weights.--From summ.

Spalding, D. J., and H. B. Mitchell. ABUNDANCE AND DISTRIBUTION OF CALIFORNIA BIGHORN SHEEP IN NORTH AMERICA. *J. Wildl. Mgmt.* 34(2): 473-475, 1 fig. Apr. 1970. *WR 139: 55*

[British Columbia Fish & Wildl. Branch, Penticton, Canada.] Abstract: There is a minimum of 3,000 California bighorn sheep *(Ovis canadensis californiana)* in several herds (native and introduced) from central British Columbia south to central California.

Spinage, C. A. TERRITORIALITY AND SOCIAL ORGANIZATION OF THE UGANDA DEFASSA WATERBUCK *KOBUS DEFASSA UGANDAE. J. Zool.* (London) 159(3): 329-361, illus. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 55*

[British High Comm., Kampala, Uganda.]

Spinage, C. A. WATERBUCK MANAGEMENT DATA. *East African Agr. Forestry J.* 34 (3): 327-335, illus. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 55*

[British High Comm., Kampala, Uganda.]

Taber, Richard D. LAND USE AND NATIVE CERVID POPULATIONS IN AMERICA NORTH OF MEXICO. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 201-225, 6 figs. 1965. In English with French and German summ. *WR 139: 55*

[Mont. State Univ., Missoula.]

Taylor, R. H. SELF-ATTACHING COLLARS FOR MARKING RED DEER IN NEW ZEALAND. *Deer* 1(10): 404-407, 4 figs. Nov. 1969. *WR 139: 55*

[Animal Ecol. Div., DSIR, Lower Hutt, New Zealand.] Summary: A new type of self-attaching collar, with stainless steel snap-lock, has been used to tag about 275 wild red deer *(Cervus elaphus)* near Nelson, in the South Island of New Zealand. Fifty-one self-tagged deer have so far been shot by hunters; six collars worn for over two years showed no sign of serious deterioration. Some deer had acquired collars in three different localities and others had moved up to twenty miles from where marked.

Thomas, Donald C. POPULATION ESTIMATES OF BARREN-GROUND CARIBOU MARCH TO MAY, 1967. *Can. Wildl. Serv. Rep. Ser.* 9: 2-44, illus. 1969. [From Biol. Abstr. 51(11), 1970. In English with Russian and French summ.] *WR 139: 55*

Tinley, K. L. DIKDIK *MADOQUA KIRKI* IN SOUTH WEST AFRICA: NOTES ON DISTRIBUTION, ECOLOGY AND BEHAVIOUR. *Madoqua* no. 1. p. 7-33, 8 figs. + 14 pls. 1969. *WR 139: 56*

[Nature Conserv. Branch, South West Africa Admin., Windhoek, South West Africa.] The Angolon or Damara dikdik, *Madoqua kirki* Günther is the only species of dikdik which occurs in southern Africa. The distribution of dikdik in South West Africa and Angola follows closely that of the broken ground of inselbergs, hill ranges, mountain pediments and riverine strips. They occur in woodland and/or thicket in which the ground layer is mostly free of grass but with a well-developed shrub layer, and are primarily browsers of leaves, shoot tips, and fallen plant material. Behavior is described, including reproduction, calls, use of nose, scent-producing glands, digital pads, and defecation habits.

Turček, F. J. LARGE MAMMAL SECONDARY PRODUCTION IN EUROPEAN BROAD LEAVED AND MIXED FORESTS. SOME RESULTS AND METHODS OF RECENT RESEARCH. *Biologia* (Bratislava) 24(2): 173-181. 1969. [From Biol. Abstr. 51(13), 1970. In English with Czech and Russian summ.] *WR 139: 56*

[Czech. Acad. Sci., Banská Stiavnica, Czechoslovakia.]

Valentinčič, S. ÜBER DIE NATÜRLICHE SELEKTION BEIM REHWILD UND INSBESONDERE ÜBER DIE ROLLE DER PARASITEN HIEBEI. [ON NATURAL SELECTION IN ROE DEER AND THE ROLE OF PARASITES IN PARTICULAR.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 133-138. 1965. In German with English summ. *WR 139: 56*

[Titova 25, Ljubljana, Yugoslavia.]

Verme, Louis J. SOME CHARACTERISTICS OF CAPTIVE MICHIGAN MOOSE. *J. Mammal.* 51(2): 403-405, 1 fig. May 1970. *WR 139: 56*

[Mich. Dept. Nat. Resources, Shingleton.] *"Alces americana."*

Weaver, Richard A., and Jerry L. Mensch. BIGHORN SHEEP IN SOUTHERN RIVERSIDE COUNTY. *Calif. Dept. Fish & Game Wildl. Mgmt. Admin. Rept.* no. 70-5. 36 p. May 1970. *WR 139: 56*

All known sheep ranges in the area were surveyed and information on population, distribution, habitat, reproduction, and available water supplies gathered. Problems affecting bighorn within the area are encroachment of human habitation, lack of sufficient water and loss of vegetative cover from drought. Predators appear to be an insignificant factor.--From abstr.

Woolf, Alan, Thomas O'Shea, and Douglas L. Gilbert. MOVEMENTS AND BEHAVIOR OF BIGHORN SHEEP ON SUMMER RANGES IN YELLOWSTONE NATIONAL PARK. *J. Wildl. Mgmt.* 34(2): 446-450. Apr. 1970. *WR 139: 56*

[Rachelwood Wildl. Res. Preserve, New Florence, Pa.] Abstract: The ecology of bighorn sheep *(Ovis canadensis)* was studied in Yellowstone National Park, Wyoming, during the summers of 1966 and 1967. Ewe groups often included rams up to 2 years old, but rams older than 2 years remained in their own groups. With few exceptions, the sexes remained separated on summer ranges. Group composition was unstable, and bands often dispersed or formed again. Other than a separation of sexes, distinct groups were not found in areas of bighorn concentration. Adults generally led groups, but there were no established leaders. Bighorns were observed feeding long after sunset, and movements as far as one-half mile occurred after dark.

Youngson, R. W. REARING RED DEER CALVES IN CAPTIVITY. *J. Wildl. Mgmt.* 34 (2): 467-470, 1 fig. Apr. 1970. *WR 139: 56*

[Nature Conservancy, Edinburgh, Scotland.] Abstract: Eleven red deer hind calves *(Cervus elaphus)* were successfully hand-reared on the Isle of Rhum, Scotland. They were removed from the wild 2-7 days after birth, placed in an indoor rearing pen, and bottle-fed daily with 3 pints of reconstituted full-cream domestic cow's milk. At 2 weeks of age, they were transferred to an outdoor pasture. During weaning, they were fed an approximation of the British Columbian deer ration No. 36-57, chopped potatoes, and rye-grass *(Lolium* sp.) hay. This diet was provided each winter. The animals were weighed at regular intervals and all attained puberty at about 17 months of age.

DEER (Odocoileus)

Anderson, Allen E., Dean E. Medin, and David C. Bowden. ERYTHROCYTES AND LEUKOCYTES IN A COLORADO MULE DEER POPULATION. *J. Wildl. Mgmt.* 34(2): 389-406, 4 figs. Apr. 1970. *WR 139: 57*
[Colo. Div. Game, Fish & Parks, Fort Collins.]

Anderson, Allen E., Walter A. Snyder, and George W. Brown. INDICES OF REPRODUCTION AND SURVIVAL IN FEMALE MULE DEER, GUADALUPE MOUNTAINS, NEW MEXICO. *Southwestern Nat.* 15(1): 29-36, 2 figs. 1 June 1970. *WR 139: 57*
[Colo. Div. Game, Fish & Parks, Fort Collins.] Abstract: Mean counts of corpora albicantia of adult mule deer *(Odocoileus hemionus)* (with 95% confidence limits) were 1.28 (1.13-1.43) per deer based on 179 sets of ovaries and 1.33 (1.17-1.49) based on 147 sets. Only 1% of 15- to 17-month-old deer had apparently conceived as a fawn. Based on 3,879 female mule deer sampled at check stations (1954-1959), the number of yearlings per 100 adults ranged from 29 to 62.

Anonymous. AVITAMINOSIS E IN A WHITE TAILED DEER *(ODOCOILEUS VIRGINIANA)*. *J. Small Anim. Pract.* 9(3): 130-131. 1968. [From Biol. Abstr. 51(8), 1970.] *WR 139: 57*

Boddicker, Major L., and Ernest J. Hugghins. PARASITES OF WHITE-TAILED AND MULE DEER IN SOUTH DAKOTA. *Proc. S. Dak. Acad. Sci.* 48: 47-57, 3 figs. 1969. *WR 139: 57*
[S. Dak. State Univ., Brookings.]

Goss, Richard J. PHOTOPERIODIC CONTROL OF ANTLER CYCLES IN DEER: I. PHASE SHIFT AND FREQUENCY CHANGES. *J. Exptl. Zool.* 170(3): 311-324, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 57*
[Brown Univ., Providence, Rhode Island.]

Goss, Richard J. PHOTOPERIODIC CONTROL OF ANTLER CYCLES IN DEER: II. ALTERATIONS IN AMPLITUDE. *J. Exptl. Zool.* 171(2): 223-234, illus. 1969. [From Biol. Abstr. 51(6), 1970.] *WR 139: 57*
[Brown Univ., Providence, R.I.]

Harlow, Richard F., and Robert L. Downing. DEER BROWSING AND HARDWOOD REGENERATION IN THE SOUTHERN APPALACHIANS. *J. Forestry* 68(5): 298-300, 1 fig. May 1970. *WR 139: 57*
[Southeastern Forest Expt. Sta., Blacksburg, Va.] Abstract: Deer browsing effects were evident on the height growth of important timber species seven years after heavy selection cutting. Although the number of stems which exceeded the 4.5-foot level were significantly reduced, a sufficient number escaped to provide adequate stocking.

Hawkins, R. E., and W. D. Klimstra. A PRELIMINARY STUDY OF THE SOCIAL ORGANIZATION OF WHITE-TAILED DEER. *J. Wildl. Mgmt.* 34(2): 407-419, 3 figs. Apr. 1970. *WR 139: 57*
[Southern Ill. Univ., Carbondale.] Abstract: Four hundred sixty-five white-tailed deer *(Odocoileus virginianus)* on Crab Orchard National Wildlige Refuge were individually marked with collars and other devices from July, 1962, through March, 1965; 9,775 sightings were recorded for these deer, yielding data for 49 family groups with two to five marked deer each. The most common family group was an adult doe, her yearling daughter, and two fawns belonging to the older doe. The structure of family groups suggested that most groupings were matriarchal with three or even four generations represented. During the fawning season adult does separated themselves socially and spatially from all other deer. Most fawns began accompanying their mothers in daily travels during September. The average frequency of association from that time until the next fawning season for a doe and her fawn(s) was 74 percent, the same as for sibling fawns. Yearling siblings typically stayed together during the summer; they continued to use the same areas occupied as fawns. A yearling with no sibling

normally stayed alone during the summer and fall except to associate randomly with other groups. Yearling buck and doe siblings tended to break up during October to November. Yearling bucks never regrouped with their mothers; however, they regrouped with other bucks during February to May. Yearling does normally regrouped with their mothers after the fawning season with centers of activity being similar; this pattern lasted until the next fawning season when the yearlings were 2 years old. Subadult does were thought to remain together until they were 2 years old in most instances. Eighty percent of the yearling bucks emigrated while 10 percent made wandering movements only to later return to their original areas; the remaining 10 percent were sedentary. In contrast, 87 percent of the yearling does were sedentary. Movements of yearling bucks stabilized by February when settled on new ranges. Bucks were believed to have become permanent residents in areas established as yearlings (1 to 2 years old). Eighty-two percent of all pairs of related adult does broke up by the time the younger member became 3 years old. Adult bucks were gregarious from February through August; 80 percent of the buck groups contained two to four animals. From September through January adult bucks tended to stay alone. The extent of association of adult bucks with doe-fawn groups was higher on the average from November through January than for the rest of the year. Large feeding groups of 25-30 deer were common during late winter and early spring; such groups were temporary associations as members did not move and bed together as a herd.

Hawkins, R. E., W. D. Klimstra, L. W. Lamely, and D. C. Autry. A NEW REMOTE CAPTURE METHOD FOR FREE-RANGING DEER. *J. Mammal.* 51(2): 392-394. May 1970. *WR 139: 58*

[Southern Ill. Univ., Carbondale.] *Odocoileus virginianus* were captured through the use of .22 caliber BB caps with drugs. Drugs used included: succinocholine, "Anectine", etorphine, cyprenorphine, methotrimeprazine, and hyaluronidase.

Hawkins, R. E., and G. G. Montgomery. POPULATION DYNAMICS OF THE DEER HERD IN WESTERN POPE COUNTY, ILLINOIS. *Trans. Ill. State Acad. Sci.* 62(2): 135-140, illus. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 58*

[Southern Ill. Univ., Carbondale.]

Kjos, Charles G., and G. G. Montgomery. DAYTIME LOCATIONS AND BEDSITES OF WHITE-TAILED DEER FAWNS. *Trans. Ill. State Acad. Sci.* 62(2): 117-119, illus. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 58*

[Ill. Nat. Hist. Surv., Urbana.]

Miller, Frank L. DISTRIBUTION PATTERNS OF BLACK-TAILED DEER *(ODOCOILEUS HEMIONUS COLUMBIANUS)* IN RELATION TO ENVIRONMENT. *J. Mammal.* 51(2): 248-260, 1 fig. May 1970. *WR 139: 58*

[Canadian Wildl. Serv., Highway 31, Ottawa, Canada.] Abstract: During 1964, 1410 hours of observation yielded 6746 sightings of black-tailed deer *(Odocoileus hemionus columbianus)* within the Cedar Creek study enclosure on the Tillamook Burn, Oregon. Deer activity was influenced by age, sex, reproductive phase, extremes or sharp changes in temperature, minimum relative humidity, and precipitation. Deer sought cover by midmorning from mid-May to November when weekly extreme temperatures exceeded 60°F. Their activity was sharply reduced by heavy summer rainfall, but was not influenced by winter rains. Monthly and annual home ranges were related to age and sex, and varied with changes in the reproductive cycle and forage availability. Annual home ranges varied from one-eighth to one-half square mile.

Ozoga, John J., and Louis J. Verme. WINTER FEEDING PATTERNS OF PENNED WHITE-TAILED DEER. *J. Wildl. Mgmt.* 34(2): 431-439, 4 figs. Apr. 1970. *WR 139: 58*

[Mich. Dept. Nat. Resources, Shingleton.] Abstract: Overwinter trends in relative feeding activity, amount of browse consumed, and daily rhythms of penned white-tailed deer *(Odocoileus virginianus)* fawns and adult does were monitored during the winters of 1966-67 and 1967-68, in Michigan's Upper Peninsula. The

normal pattern consisted of high levels of food intake and activity in early winter (December-January) and again towards spring (late March), with a marked reduction during the interim. Adult does entering the winter underweight, and the fawns, showed the greatest fluctuations in feeding and activity, whereas does at maximum weight during autumn exhibited more uniform levels throughout the season. The typical early winter feeding rhythm for all deer followed a cyclic pattern of peak activity every 4-6 hours, namely at sunrise, midday, sunset, and twice at night. As winter progressed they reduced nocturnal and early morning movements and concentrated their activities during the warmest part of the day. Cessation of feeding following the evening peak was significantly correlated ($P<0.01$) with time of sunset throughout winter.

Pearson, Henry A. RUMEN MICROBIAL ECOLOGY IN MULE DEER *(ODOCOILEUS HEMIONUS)*. *Appl. Microbiol.* 17(6): 819-824. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 59*
[Rocky Mountain Forest & Range Expt. Sta., Fort Collins, Colo.]

Short, Cathleen. MORPHOLOGICAL DEVELOPMENT AND AGING OF MULE AND WHITE-TAILED DEER FETUSES. *J. Wildl. Mgmt.* 34(2): 383-388. Apr. 1970. *WR 139: 59*
[Box 7600, Nacogdoches, Texas.] Abstract: The morphological development of 83 Colorado mule deer fetuses *(Odocoileus hemionus)* of estimated age and 21 Michigan white-tailed deer fetuses *(O. virginianus)* of known-age is described. Brief accounts of fetal skeletal development and external appearance are included for the known-age white-tailed deer fetuses. Body weight and several external linear and internal mass measurements can be satisfactorily utilized to estimate fetal age but appearance is the best indicator during the embryonic stage. The use of more than one measurement in calculating age for older fetuses is recommended. Fetuses over 180 days gestation appear as essentially term.

Sparrowe, Rollin D., and Paul F. Springer. SEASONAL ACTIVITY PATTERNS OF WHITE-TAILED DEER IN EASTERN SOUTH DAKOTA. *J. Wildl. Mgmt.* 34(2): 420-431, 5 figs. Apr. 1970. *WR 139: 59*
[Mo. Coop. Wildl. Res. Unit, Columbia.] Abstract: Seasonal activity patterns of white-tailed deer *(Odocoileus virginianus)* were studied intensively along a 15-mile stretch of the Big Sioux River and less intensively on an expanse of 1,100 square miles in central eastern South Dakota from February, 1964, to March, 1966. Thirty-three deer were marked individually with ear tags, streamers, and collars, and 461 locations were recorded. Five of these deer were tracked by radio-telemetry. For adult and yearling deer, average total area ranges in square miles were: summer, 1.0 ± 0.5; fall, 0.7 ± 0.3; winter, 2.7 ± 1.7. For the same deer, maximum linear ranges in miles were: summer, 1.7 ± 0.5; fall, 1.8 ± 0.4; winter, 2.5 ± 0.9. No significant differences ($P>0.05$) were found for total area or maximum linear ranges between seasons, or among adults, yearlings, and fawns in winter. Total linear ranges for deer observed in more than one season averaged 12.0 ± 2.2 miles for males, and 11.1 ± 2.1 miles for females. These ranges were not significantly different ($P>0.05$). In early January, discrete herds of up to 80 animals began to form. Some herds wintered in fairly well-defined areas, but up to 30 percent of the deer population remained widely scattered all winter and deer moved up to 12 miles between herds. Instability of winter herds ruled out the use of winter herd counts as an accurate population index. When the thaw occurred in March or April, deer dispersed in several directions at varying rates with a predominance of northward movements along the Big Sioux River and its tributaries. Average distance between winter and summer ranges for six deer was 14.4 ± 1.5 miles. The deer population was partially migratory in that it used all of the study area in summer but withdrew to a small part of it in winter. The home-range pattern of deer included one or more sub-areas which provided all habitat needs. When these requirements were disturbed, depleted, or changed, deer moved to a new sub-area. Data from this study indicated that deer management units, if they could be administered effectively, might better be based on natural drainages than on counties.

DEER (Odocoileus)--Continued

Thomas, F. C., and D. O. Trainer. BLUETONGUE VIRUS IN WHITE-TAILED DEER. *Am. J. Veterinary Res.* 31(2): 271-278, 2 figs. Feb. 1970. *WR 139: 60*
[Univ. Wis., Madison.] Summary: Bluetongue (BT) virus from 2 sources was used to determine virus-host relationships in 24 white-tailed deer *(Odocoileus virginianus)*. Different doses of deer-passaged virus and egg-passaged vaccinal virus, both of the "standard" North American BT_8 strain, were inoculated subcutaneously into deer kept in isolation. The L cell (Clone 929) and BHK-21 cell (Clone 13) monolayer cultures were used to measure viremia and tissue-associated virus. Two types of infection were demonstrated: (1) an acute rapidly fatal form and (2) a subclinical form accompanied by persistent viremia. It seems that white-tailed deer are very susceptible to BT virus and may be important hosts in nature.

Thornton, J. E. NORTHWESTERN VIRGINIA'S 1969 DEER HARVEST. *Va. Wildl.* 31 (7): 22, 1 fig. July 1970. *WR 139: 60*
Totals of both male and female deer killed during the hunting seasons of 1968 and 1969 for 14 counties in northwestern Virginia are given. The change of "hunter choice" day to the last day of the season brought about the desired effect of reducing the number of does killed. Hunting pressure during the 1969 deer season was up over the 1968 season, and production was stable. Total deer harvested was 11,877, which was 2,439 above the total for 1968.

MAMMALS--MARINE

Baker, Ralph C., Ford Wilke, and C. Howard Baltzo. THE NORTHERN FUR SEAL. *US F&WS, Bur. Commercial Fisheries Circ.* 336. iii + 19 p., illus. Apr. 1970. *WR 139: 60*
Abstract: The early history of worldwide fur sealing; the distribution and movement of northern fur seals; and their food, physical characteristics, reproduction, and mortality and disease are discussed. Information is also given on fur seal population, management, and research; sealing on the Pribilof Islands; and processing and sale of fur seal skins.

Bigg, Michael A. THE HARBOR SEAL IN BRITISH COLUMBIA. *Fish. Res. Bd. Can. Bull.* 172: 1-33, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 60*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] *"Phoca vitulina richardi."*

Frey, Herbert W., and J. A. Aplin. SEA LION CENSUS FOR 1969, INCLUDING COUNTS OF OTHER CALIFORNIA PINNIPEDS. *Calif. Fish & Game* 56(2): 130-133. Apr. 1970. *WR 139: 60*
"Sea lions, harbor seals, and northern elephant seals."

Gambell, Ray. SEASONAL CYCLES AND REPRODUCTION IN SEI WHALES OF THE SOUTHERN HEMISPHERE. *Discovery Repts.* 35: 35-133, illus. 1968. [From Biol. Abstr. 51 (12), 1970.] *WR 139: 60*
[Nat. Inst. Oceanogr., London, England.] *"Balaenoptera borealis."*

Hamlin, Robert L., Ronald F. Jackson, J. A. Himes, Frank S. Pipers, and A. Clifford Townsend. ELECTROCARDIOGRAM OF BOTTLE-NOSED DOLPHIN *(TURSIOPS TRUNCATUS)*. *Am. J. Vet. Res.* 31(3): 501-505. Mar. 1970. *WR 139: 60*
[Ohio State Univ., Columbus.] Summary: Certain electrocardiographic measurements were recorded from 11 bottlenosed dolphins *(Tursiops truncatus)* and were similar to those from horses. The heart of the dolphin is oriented within its torso similar to that of the horse and all other animals classed in group B of mammals (based on complete penetration of Purkinje's fibers to the epicardium of the ventricular free-walls in these species).

Harrison, Richard J., R. C. Boice, and R. L. Brownell, Jr. REPRODUCTION IN WILD AND CAPTIVE DOLPHINS. *Nature* (London) 222(5199): 1143-1147, illus. 1969. [From Biol. Abstr. 51(13), 1970.] *WR 139: 60*
[Univ. Cambridge, Cambridge, England.]

King, Judith E. IDENTITY OF THE FUR SEALS OF AUSTRALIA. *Australian J. Zool.* 17(5): 841-853, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 61*
[Univ. New South Wales, Kensington, Australia.] *"Arctocephalus forsteri* and *A. doriferus."*

Kogai, V. M. [SUMMER OBSERVATIONS ON THE FUR SEAL ON TYULENIE ISLAND AND THE ADJACENT WATERS OF THE SEA OF OKHOTSK.] *Izvest. Tikhookean. Nauch.-Issled. Inst. Ryb. Khoz. Okeanol.* 65: 259-262. 1968. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1969, no. 8I513. Transl. of Russian abstr.] *WR 139: 61*

Ling, John K. A REVIEW OF ECOLOGICAL FACTORS AFFECTING THE ANNUAL CYCLE IN ISLAND POPULATIONS OF SEALS. *Pacific Sci.* 23(4): 399-413, 4 figs. Oct. 1969. *WR 139: 61*
[Univ. Newfoundland, St. John's, Newfoundland, Canada.] Abstract: Colonization of island habitats by pinnipeds for all or part of their life cycle may expose the populations to various pressures. While the advantages of an island rookery must override the disadvantages for such a situation to be selected, its most efficient utilization by one or more species can be achieved only by coordination of the annual cycles within and between species. Certain age categories or species must make way for others at critical phases of the annual cycle if habitat preferences are the same. However, more than one age group or species can coexist when habitat requirements do not overlap. Interspecific strife is reduced to a minimum by either spatial, temporal, or behavioral separation, but deleterious interspecific contact may occur. Intraspecific strife between different age classes is prevented by variable annual cycles with respect to age, but within any narrow age category such interaction as occurs may affect the number of females being fertilized and thereby act as a regulator of population size.

Mackintosh, N. A. THE STOCKS OF WHALES. *Fishing News (Books) Ltd.* (London). 232 p., 24 figs. + 20 pls., 5.75 x 8.75 in. October 1965. Price $7.25. *WR 139: 61*
After a general introductory chapter there are chapters on: Species and attributes of whales, Migrations and feeding, Breeding, Distribution and segregation of the population, Population structure, Production of whales, Whaling industry and its regulation, Taxation and status of the separate species, and Stock analysis.

Mate, Bruce R. OLDEST TAGGED NORTHERN ELEPHANT SEAL RECOVERED IN OREGON. *Calif. Fish & Game* 56(2): 137. Apr. 1970. *WR 139: 61*
"Recovery of *Mirounga angustirostris* 6.5 years after tagging."

Norris, Kenneth S., editor. WHALES, DOLPHINS, AND PORPOISES. *Univ. Calif. Press* (Berkeley & Los Angeles). xv + 788 p., illus., 7 x 10 in. 1966. Price $15.00. *WR 139: 61*
"This book, a representative cross section of the science of cetology, is the result of a unique meeting of physical scientists and biologists whose research into a wide variety of scientific disciplines, including systematics, fisheries management, zoögeography, natural history, anatomy, physiology, hydrodynamics, acoustics, linguistics, and behavior has brought them to share a common interest in the most recent advances in cetology.... The contributors to the book include Richard H. Backus, Gregory Bateson, René-Guy Busnel, David K. Caldwell, Melba C. Caldwell, William H. Dawbin, John J. Dreher, W. H. Dudok van Heel, Albin Dziedzic, William J. L. Felts, N. J. Flanigan, F. C. Fraser, Robert S. Gales, Charles O. Handley, Jr., Tadayoshi Ichihara, Laurence Irving, Age Jonsgard, John Kanwisher, Winthrop N. Kellogg, Lawrence Kruger, Thomas G. Lang, John C. Lilly, R. Stuart Mackay, N. A. Mackintosh, L. Harrison Matthews, Joseph Curtis Moore, Masaharu Nishiwaki, Hideo Omura, Peter E. Purves, F. W. Reusenbach de Haan, Charles E. Rice, Dale W. Rice, William E. Schevill, George G. Silberberg, E. J. Slijper, James M. Snodgrass, Winston H. Starks, John C. Steinberg, Gunnar Sundnes, Margaret C. Tavolga, and William A. Watkins."

Øritsland, N. A. VARIATIONS IN THE BODY SURFACE TEMPERATURE OF THE HARP SEAL. *Acta Physiol. Scand.* 73(1/2): 35A, illus. 1968. [From Biol. Abstr. 51 (12), 1970.] *WR 139: 62*
[Univ. Oslo, Oslo, Norway.]

Perrin, William F., and Carl L. Hubbs. OBSERVATIONS ON A YOUNG PYGMY KILLER WHALE *(FERESA ATTENUATA* GRAY*)* FROM THE EASTERN TROPICAL PACIFIC OCEAN. *Trans. San Diego Soc. Nat. Hist.* 15(18): 297-308, illus. 1969. [From Biol. Abstr. 51 (6), 1970. In English with Spanish summ.] *WR 139: 62*
[Bur. Commercial Fish., LaJolla, Calif.]

Piggins, David J. REFRACTION OF THE HARP SEAL, *PAGOPHILUS GROENLANDICUS* (ERXLEBEN 1777). *Nature* 227(5253): 78-79. 4 July 1970. *WR 139: 62*
[Univ. Guelph, Guelph, Ontario, Canada.] There is a significant difference between the refraction of the harp seal eye in air and water. The changes in the shape and size of the pupil are related to the sight medium.

Ray, Carleton, William A. Watkins, and John J. Burns. THE UNDERWATER SONG OF *ERIGNATHUS* (BEARDED SEAL). *Zoologica* (New York) 54(2): 79-83, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 62*
[Johns Hopkins Univ., Baltimore, Md.]

Roest, Aryan I. *KOGIA SIMUS* AND OTHER CETACEANS FROM SAN LUIS OBISPO COUNTY, CALIFORNIA. *J. Mammal.* 51(2): 410-417, 1 fig. May 1970. *WR 139: 62*
[Calif. State Polytech. Coll., San Luis Obispo.]

Scheffer, Victor B. CAN WE SAVE THE GREAT WHALES? *McCalls* 98(8): 54, 57. May 1970. *WR 139: 62*
Popular account of the decline of certain species of whale and the shifting of harvest pattern in an attempt at their conservation.

Usher, Peter J., and Michael Church. ON THE RELATIONSHIP OF WEIGHT, LENGTH AND GIRTH OF THE RINGED SEAL *(PUSA HISPIDA)* OF THE CANADIAN ARCTIC. *Arctic* 22 (2): 120-129, illus. 1969. [From Biol. Abstr. 51(2), 1970. In English with French and Russian summ.] *WR 139: 62*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

MAMMALS--OTHER GROUPS

Albignac, R. NOTES ÉTHOLOGIQUES SUR QUELQUES CARNIVORES MALGACHES: LE *GALIDIA ELEGANS*. [ETHOLOGICAL NOTES ON SOME MALAGASY CARNIVORES: *GALIDIA ELEGANS*.] *Terre & Vie* 116(2): 202-215, illus. 1969. [From Biol. Abstr. 51 (2), 1970. In French with English summ.] *WR 139: 62*
[Parc. Zool., Tananarive, Malagasy Republic.]

Carpenter, G. P. SOME OBSERVATIONS ON THE RUSTY SPOTTED GENET *(GENETTA RUBIGINOSA ZULUENSIS)*. *Lammergeyer* 3(11): 60-63. Apr. 1970. *WR 139: 62*
[P.O. Box 7, Umlaas Road, Natal, South Africa.] The habits and habitat of the nocturnal rusty-spotted genet are being studied in relation to its predation on poultry.

Dagg, A. I. TACTILE ENCOUNTERS IN A HERD OF CAPTIVE GIRAFFES. *J. Mammal.* 51(2): 279-287. May 1970. *WR 139: 62*
[Univ. Guelph, Guelph, Ontario, Canada.] A behavior study of 18 giraffes at Taronga Zoo in Sydney, Australia.

Francq, Edward N. ELECTROCARDIOGRAMS OF THE OPOSSUM, *DIDELPHIS MARSUPIALIS*, DURING FEIGNED DEATH. *J. Mammal.* 51(2): 395. May 1970. *WR 139: 62*
[Univ. N.H., Durham.]

MAMMALS--OTHER GROUPS--Continued

Griffiths, Mervyn, D. L. McIntosh, and R. E. A. Coles. THE MAMMARY GLAND OF THE ECHIDNA, *TACHYGLOSSUS ACULEATUS*, WITH OBSERVATIONS ON THE INCUBATION OF THE EGG AND ON THE NEWLY-HATCHED YOUNG. *J. Zool.* (London) 158(3): 371-386, illus. 1969. [From Biol. Abstr. 51(2), 1970.] *WR 139: 63*
[CSIRO, Div. Wildl. Res., Canberra, Australia.]

Russell, Eleanor M. SUMMER AND WINTER OBSERVATIONS OF THE BEHAVIOR OF THE EURO *MACROPUS ROBUSTUS* (GOULD). *Australian J. Zool.* 17(4): 655-664, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 63*
[Univ. N.S.W., Kensington, N.S.W., Australia.]

Smith, Meredith J., B. K. Brown, and H. J. Frith. BREEDING OF THE BRUSH-TAILED POSSUM, *TRICHOSURUS VULPECULA* (KERR), IN NEW SOUTH WALES. *CSIRO Wildl. Res.* 14(2): 181-193, 7 figs. Dec. 1969. *WR 139: 63*
[Univ. Adelaide, Adelaide, South Australia.]

Smith, R. F. C. STUDIES ON THE MARSUPIAL GLIDER, *SCHOINOBATES VOLANS* (KERR): I. REPRODUCTION. *Australian J. Zool.* 17(4): 625-636, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 63*
[Univ. Alberta, Edmonton, Alberta, Canada.]

Tenaza, Richard, Bruce A. Ross, Prayot Tanticharoenyos, and Gershon Berkson. INDIVIDUAL BEHAVIOUR AND ACTIVITY RHYTHMS OF CAPTIVE SLOW LORISES *(NYCTICEBUS COUCANG)*. *Animal Behaviour* 17(4): 664-669, 3 figs. + 4 figs. on 2 pls. Nov. 1969. *WR 139: 63*
[Univ. Calif., Davis.]

Walin, Tapani, Antti Soivio, and Rolf Kristoffersson. HISTOLOGICAL CHANGES IN THE REPRODUCTIVE SYSTEM OF FEMALE HEDGEHOGS DURING THE HIBERNATION SEASON. *Ann. Zool. Fenn.* 5(3): 227-229, illus. 1968. [From Biol. Abstr. 51(1), 1970.] *WR 139: 63*
[Univ. Helsinki, Helsinki, Finland.]

Wilson, Don E. OPOSSUM PREDATION: *DIDELPHIS* ON *PHILANDER*. *J. Mammal.* 51 (2): 386-387. May 1970. *WR 139: 63*
[Univ. N. Mex., Albuquerque.]

Wing, Larry D., and Irven O. Buss. ELEPHANTS AND FORESTS. *Wildl. Monographs* no. 19. 92 p., 25 figs. Feb. 1970. *WR 139: 63*
[Iowa State Univ., Ames.] A discussion of the ecological importance of *Loxodonta africana* populations in the Kibale Forest Reserve is given. More than 95% of feeding is done by breaking off terminal twigs, leaves, horizontal branches or breaking the main stem or truck for the terminal twigs and leaves. Nearly 75% of all woody stems utilized by elephants are less than 1 inch dbh. Abundance and availability affect food selection. Although woody plants are a part of the daily diet, herbaceous plants are the major portion. Because of the large amount of food consumed daily by the elephant, the forest has a high rate of conversion and movement of energy.--From summ.

BIRDS--GENERAL

Amadon, Dean. BIRDS AROUND THE WORLD / A GEOGRAPHICAL LOOK AT EVOLUTION AND BIRDS. *Nat. Hist. Press* (New York). x + 175 p., 30 figs., 5.75 x 8.5 in. 1966. Price $3.95. *WR 139: 63*
The distribution and evolution of bird species is a fascinating point of inquiry for the naturalist. Some of the geological and geographical factors in limiting and encouraging speciation and range expansion are discussed in this book, along with the history of the evolution of birds and the extinction of some species. Chapter headings are: First principles [of evolution and distribution], The effect of physical barriers, Ecological requirements, Harmful and beneficial factors, Species dynamics and distribution, Distribution of higher systematic categories, Geographical patterns of distribution--faunas, and Ecological systems of classifying distribution.

Beaudoin, Jean-Claude. DONNÉES RÉCENTES SUR LA REPRODUCTION DE QUELQUES ESPÈCES TRÈS LOCALES EN MAINE-ET-LOIRE. [RECENT INFORMATION ON THE REPRODUCTION OF LOCAL SPECIES IN MAINE-ET-LOIRE (FRANCE).] *Alauda* 36(3): 175-178. 1968. [From Biol. Abstr. 51(5), 1970. In French.] *WR 139: 64*

[Résidence Rabelais, Angers, France.] *"Ardea cinerea, Circaetus gallicus, Oenanthe oenanthe, Anthus campestris* and *Anthus pratensis."*

Hanzak, J. THE PICTORIAL ENCYCLOPEDIA OF BIRDS. *Crown Publishers, Inc.* (New York). 582 p., 1075 photos + 45 pls., 6.25 x 9 in. 1968. Price $10.00. *WR 139: 64*

All the 27 orders recognized by Oliver L. Austin in *Birds of the World* are represented in the encyclopedia, and most of the 155 families. No species is mentioned in the text without a supporting photograph apart from one or two birds which are externally identical to others that are shown. The text has been edited by Dr. Bruce Campbell, and consists of common and scientific names for the species and a short description of appearance, occurrence, and habits. More than 1100 black and white photographs are used to illustrate the birds of the world, one of the fullest pictorial surveys ever produced.

Harris, M. P. BREEDING SEASONS OF SEA-BIRDS IN THE GALAPAGOS ISLANDS. *J. Zool.* (London) 159(2): 145-165, illus. 1969. [From Biol. Abstr. 51(6), 1970.] *WR 139: 64*

[Univ. Oxford, Oxford, England.]

Lanyon, Wesley E. BIOLOGY OF BIRDS. *Doubleday & Co.* (New York). xii + 175 p., 64 figs., 5.75 x 8.5 in. 1964. Price $3.95. *WR 139: 64*

Writing for the student and the bird lover who wishes to go beyond mere identification, the author describes what is known about the origins of birds and their evolution from reptilian ancestors into today's diversified forms. He records their development into efficient flying machines and explains how species have evolved with unique ways of coping with environment. The book outlines the world-wide distribution of birds and covers the subject of migration and navigation. Courtship and reproduction, bird songs and calls, and the entire life cycle of birds from egg to adult are explained.

Niethammer, G. VERGLEICH DER RENTHENDORFER HAUSSPERLINGE VON HEUTE MIT EINER VON C. L. BREHM VOR 110 JAHREN GESAMMELTEN SERIE. [COMPARISON OF THE RECENT COLLECTED SAMPLES OF HOUSE SPARROWS FROM RENTHENDORFER WITH THE SAMPLES COLLECTED BY C. L. BREHM 110 YEARS AGO.] *J. Ornithol.* 110(2): 205-208. 1969. [From Biol. Abstr. 51(8), 1970. In German with English summ.] *WR 139: 64*

Peterson, Roger Tory. BIRDS OVER AMERICA (Second edition). *Dodd, Mead & Co.* (New York). xiii + 342 p., 105 photos, 7 x 10 in. 1964. Price $7.50. *WR 139: 64*

In addition to eighty pages of photographs from the author's collection, the book is crammed with fascinating data and personal experiences. *Birds Over America* is not limited to bird behavior or identification. It discusses populations and communities; changes in bird life; introduced species; hawk flights; oceanic birds; and birds of beach, marsh, rocky coast, mountain, desert, and Southern swamp. Intimate portrayals of many outstanding field specialists are given in recording some of their techniques.

Royama, T. A MODEL FOR THE GLOBAL VARIATION OF CLUTCH SIZE IN BIRDS. *Oikos* 20(2): 562-567, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 64*

[Edward Grey Inst., Oxford, England.]

Schutz, Walter E. HOW TO ATTRACT, HOUSE & FEED BIRDS. *Bruce Publ. Co.* (New York). [vii] + 195 p., illus., 7.50 x 10.25 in. 1970. Price $7.95. *WR 139: 64*

This is a revised and expanded edition of *Bird watching, housing and feeding* published in 1963. It has been reorganized into the following units: ecology today, bird watching, food--the first requirement, water--the second requirement, shelter--the third requirement, and some helpful hints. There are more than 30 plans for the construction of bird houses and shelters.

Terres, John K. SONGBIRDS IN YOUR GARDEN (Expanded edition). *Thomas Y. Crowell Co.* (New York). xiv + 256 p., illus., 6.75 x 9.5 in. 1968. Price $6.95. *WR 139: 65*

"John K. Terres, who himself has a yard full of birds (nearly a hundred different species) relates the knowledge, the lore, and a thousand practical hints from his first-hand experience: how to feed the birds, exactly what food to give them, where to get the food, how to prepare it. He not only discusses birdhouses and feeding stations, but explains how they should be made, giving an abundance of plans, diagrams, and designs. Excellent material on birdbaths and watering fountains is included. There is information as well on the care and feeding of young birds and what to do about injured fledglings; a valuable section on ornamental planting--the shrubs you can plant that will provide food, shelter, and protection; helpful material on protecting birds from cats and other harm; and a chapter on attracting birds by sounds. A special chapter tells how to attract hummingbirds, which are to be found in nearly every part of the United States."

BIRDS--TECHNIQUES

Beck, M. W. R. EMU CAPTURE IN THE FIELD USING AN IMMOBILIZING DRUG AND CAP-CHUR APPARATUS. *CSIRO Wildl. Res.* 14(2): 195-197. Dec. 1969. *WR 139: 65*

[Div. Wildl. Res., CSIRO, Helena Valley, Western Australia.]

Bennett, Gordon F. SIMPLE TECHNIQUES FOR MAKING AVIAN BLOOD SMEARS. *Canadian J. Zool.* 48(3): 585-586, 1 fig. May 1970. *WR 139: 65*

[Memorial Univ. Newfoundland, St. John's, Newfoundland, Canada.] Abstract: Simple equipment and techniques for improving the quality of avian blood smears obtained in field surveys are described.

Blagosklonov, K. N. [USE OF BIRDS FOR COUNTING INVERTEBRATES IN A BIOGEOCENOSIS.] *Vestn. Moscow Univ. Ser. 6 Biol. Pochvoved.* 24(4): 27-30. 1969. [From Biol. Abstr. 51(12), 1970. In Russian.] *WR 139: 65*

[Moscow State Univ., Moscow, USSR.]

Clark, R. B., and J. R. Kennedy. REHABILITATION OF OILED SEABIRDS. *Univ. Newcastle upon Tyne.* i + 57 p. Aug. 1968. *WR 139: 65*

[Newcastle upon Tyne, England.] Oil pollution effects are felt the greatest in feeding and breeding areas of bird populations. Birds that spend a large proportion of their time on the water, as do diving birds, are most greatly affected. Oil contamination destroys the waterproofing and thermal insulating properties of the plumage causing death from exposure. Internal injuries from ingesting the oil also occur. Starvation in this weakened state takes the lives of others. The emulsifiers, which were used to hasten oil dispersion also appear to cause internal and external damage. Secondary effects on the population are contamination of eggs and depletion of littoral and inshore fauna on which young are fed. Earlier rescue would reduce acute contamination and hasten recovery. Problems occur during the long period of captivity required for plumage replacement and bird rehabilitation, since little is known about the food and habitat requirements of the seabirds or the treatment of hypothermia, stress, and enteric diseases caused by prolonged captivity.

Dow, Douglas D. INDEXING POPULATION DENSITIES OF THE CARDINAL WITH TAPE-RECORDED SONG. *Wilson Bull.* 82(1): 83-91, 4 figs. Mar. 1970. *WR 139: 65*

[Univ. Queensland, Brisbane, Australia.] The use of tape recordings resulted in a marked increase of birds seen and heard; however, the relationship between index and actual densities is unknown.--Courtesy/ Paul A. Stewart.

Godfrey, Geoffrey A. A TRANSMITTER HARNESS FOR SMALL BIRDS. *Inland Bird Banding News* 42(1): 3-5, 1 fig. Jan.-Feb. 1970. *WR 139: 65*

[Dept. Entomol., Fisheries & Wildl., St. Paul, Minn.] The harness, made from Penrose Latex and weighing .4 to .5 grams, with a 5 gram transmitter worked successfully on woodcock and should be adaptable for use on almost any small bird.--Courtesy/ Paul A. Stewart.

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BIRDS--TECHNIQUES--Continued

Jarvis, M. J. F. A PROBLEM IN BANDING PENGUINS. *Ostrich* 4(1&2): 120-121, 1 fig. Mar. 1970. *WR 139: 66*
[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] Previous banding methods of *Spheniscus demersus* prove unsuccessful; leg and flipper bands both, when fitted tightly enough to stay in place during non-molt, cause injury from being too tight during molt.

Kjos, Charles G., and William W. Cochran. ACTIVITY OF MIGRANT THRUSHES AS DETERMINED BY RADIO-TELEMETRY. *Wilson Bull.* 82(2): 225-226, 1 fig. June 1970. *WR 139: 66*
[Ill. Nat. Hist. Surv., Urbana.] Diurnal activity began about 20 minutes before sunrise, ceased about 20 minutes before sunset and consisted of intermittent movement and rest periods. There was nothing in the night movements of birds to indicate that a migratory flight was about to occur.--Courtesy/ Paul A. Stewart.

Murton, R. K., and N. J. Westwood. THE FOOD PREFERENCES OF PHEASANTS AND WOOD PIGEONS IN RELATION TO THE SELECTIVE USE OF STUPEFYING BAITS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 369-378. 1965. In English with French and German summ. *WR 139: 66*
[Min. Agr. Fisheries & Food, Tangley Place, Worplesdon, Surrey, England.]

Pyrah, Duane. PONCHO MARKERS FOR GAME BIRDS. *J. Wildl. Mgmt.* 34(2): 466-467, 1 fig. Apr. 1970. *WR 139: 66*
[Mont. Fish & Game Dept., Lewistown.] Abstract: A poncho neck marker for game birds was devised by slipping a rectangular piece of material with a circular hole in the center over the bird's head and down the neck. The lower neck feathers cover part of the poncho and keep it in place. Nearly 2,000 sage grouse *(Centrocercus urophasianus)* hens have been marked with excellent success. The marker has been used on sharp-tailed grouse *(Pedioecetes phasianellus)* and Hungarian partridge *(Perdix perdix)*.

BIRDS--MORPHOLOGY & PHYSIOLOGY

Banks, Richard C. MOLT AND TAXONOMY OF RED-BREASTED NUTHATCHES. *Wilson Bull.* 82(2): 201-205. June 1970. *WR 139: 66*
[U.S. Natl. Mus., Washington, D.C.] Individual red-breasted nuthatches *(Sitta canadensis)* sometimes differ by as much as two months in the stage of their molts. An earlier proposed racial subdivision was based on a faulty understanding of plumage variations.--Courtesy/ Paul A. Stewart.

Bartholomew, George A., and Charles H. Trost. TEMPERATURE REGULATION IN THE SPECKLED MOUSEBIRD, *COLIUS STRIATUS*. *Condor* 72(2): 141-146, 9 figs. Apr. 1970. *WR 139: 66*
[Univ. Calif., Los Angeles.] Body temperature, oxygen consumption, evaporative water loss, breathing rate, gular flutter and heart rate are discussed.--Courtesy/ Paul A. Stewart.

Britton, P. L. THE IMMATURE PLUMAGE OF TWO AFRICAN WARBLERS. *Bull. British Ornithol. Club* 90(1): 26-28, 2 [figs.]. Feb. 1970. *WR 139: 66*
"Bradypterus graueri carpalis and *Cisticola carruthersi."*

Brooke, R. K. THE BUCCAL COLOURS, WEIGHTS AND RACES OF *NECTARINIA BIFASCIATA*. *Bull. British Ornithol. Club* 90(1): 11-14. Feb. 1970. *WR 139: 66*
Twenty-two specimens were examined and weighed; males in nuptial plumage have dark brown or dark gray-brown buccal color. Color in adult females is more variable, and juveniles have an orange-yellow or rich yellow color.

Ewert, David N., and Wesley E. Lanyon. THE FIRST PREBASIC MOLT OF THE COMMON YELLOWTHROAT (PARULIDAE). *Auk* 87(2): 362-363. Apr. 1970. *WR 139: 66*
[Univ. Mich., Ann Arbor.] Disagrees with the conclusion reached by several authors that the common yellowthroat *(Geothlypis trichas)* differs from other wood warblers in having a complete postjuvenal molt.--Courtesy/ Paul A. Stewart.

Geys, J. F. VLEUGEL- EN STAARTLENGTE BIJ DE PIMPELMEES *(PARUS CAERULEUS* L.). [WING AND TAIL LENGTH IN THE BLUE TIT *(PARUS CAERULEUS* L.).] *Natuurwetensch. Tijdschr.* 50(4-8): 174-185. 1968. [From Biol. Abstr. 51(13), 1970. In Dutch with English summ.] *WR 139: 67*
[Rijksuniv., Ghent, Belgium.]

Harrison, C. J. O. THE CROP OF THE CHAFFINCH *FRINGILLA COELEBS*. *Bull. British Ornithol. Club* 90(1): 15-16. Feb. 1970. *WR 139: 67*
The chaffinch and probably other members of *Fringilla* possess the typical distensible esophageal region of the alimentary canal which also occurs in cardueline finches.

Hughes, Maryanne Robinson. SOME OBSERVATIONS ON ION AND WATER BALANCE IN THE PUFFIN, *FRATERCULA ARCTICA*. *Canadian J. Zool.* 48(3): 479-482. May 1970. *WR 139: 67*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] Abstract: The mean values for six adult puffins were hematocrit, 0.511 ± 0.007; plasma sodium, 160.7 ± 2.3; potassium, 3.1 ± 0.1; and chloride, 133.4 ± 1.9 meq/l. The cloacal fluid of one young laboratory-reared puffin was always hypotonic to the plasma in Na and Cl and never contained more than one-half the ingested Na, K, or Cl; contained less than 40% of the ingested water; and solid material was less than 10% of the total as determined by dry weight. In one salt load experiment (4.0 ml 1.0 N NaCl/392-gram adult) the salt glands proved very efficient, producing a secretion of 975 meq/l (maximum) Cl and eliminating 75% of the load in 20 min. The salt glands and kidneys are large, 0.1% and 1.8% of the body weight respectively.

MacBriar, Wallace N., Jr. WING MEASUREMENT VARIATIONS. *Inland Bird Banding News* 42(1): 18-20. Jan.-Feb. 1970. *WR 139: 67*
[2847 North Stowell Ave., Milwaukee, Wis.] The data seem to show that wing chord measurements are highly reliable and subject only to minor variation which are of little consequence in dealing with as highly flexible a subject as a bird.--From summ. Courtesy/ Paul A. Stewart.

Mugaas, John N., and James R. Templeton. THERMOREGULATION IN THE RED-BREASTED NUTHATCH *(SITTA CANADENSIS)*. *Condor* 72(2): 125-132, 5 figs. Apr. 1970. *WR 139: 67*
[Univ. Mont., Missoula.] Oxygen consumption, evaporative water loss, dissipation of metabolic heat, carbon dioxide production, and respiratory quotients are discussed.--Courtesy/ Paul A. Stewart.

Payne, R. B. THE MOUTH MARKINGS OF JUVENAL *VIDUA REGIA* AND *URAEGINTHUS GRANATINUS*. *Bull. British Ornithol. Club* 90(1): 16-18, 1 fig. Feb. 1970. *WR 139: 67*
The pattern of mouth markings of *V. regia* is quite similar to that of its song model and apparent host, *V. granatinus*.

Pepper, S. R., and H. J. Kennedy. MOULT AND MEASUREMENTS OF REDPOLLS *CARDUELIS FLAMMEA* IN NORTH SWEDEN, 1968. *Ornis Fennica* 47(1): 35-36. 1970. In English with Finnish summ. *WR 139: 67*
[Univ. Aberdeen, Aberdeen, Scotland.] Presents data on wing, bill and weight measurements as well as molting and feeding habits of redpolls observed in August, 1968.

Ramsey, Jed J. TEMPERATURE CHANGES IN CHIMNEY SWIFTS *(CHAETURA PELAGICA)* AT LOWERED ENVIRONMENTAL TEMPERATURES. *Condor* 72(2): 225-229, 6 figs. Apr. 1970. *WR 139: 67*
[Lamar State Coll. Technol., Beaumont, Texas.] Body temperatures of chimney swifts changed immediately with lowered ambient temperature, and a direct relationship existed between environmental and body temperatures. When these birds were subjected to cold, their body temperatures dropped, and eventually a state of torpor was evident.--From summ. Courtesy/ Paul A. Stewart.

BIRDS--MORPHOLOGY & PHYSIOLOGY--Continued

Terent'ev, P. V. [GEOGRAPHICAL VARIABILITY OF SIZE IN *PARUS MAJOR* L.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(1): 135-140, illus. 1969. [From Biol. Abstr. 51(1), 1970. In Russian with English summ.] *WR 139: 68*

BIRDS--BEHAVIOR

Alcock, John. OBSERVATIONAL LEARNING BY FORK-TAILED FLYCATCHERS *(MUSCIVORA TYRANNUS). Animal Behaviour* 17(4): 652-657. Nov. 1969. *WR 139: 68*
[Univ. Wash., Seattle.]

Austin, George T. INTERSPECIFIC TERRITORIALITY OF MIGRANT CALLIOPE AND RESIDENT BROAD-TAILED HUMMINGBIRDS. *Condor* 72(2): 234. Apr. 1970. *WR 139: 68*
[Univ. Ariz., Tucson.] *"Stellula calliope* and *Selaephorus platycercus."*--Courtesy/ Paul A. Stewart.

Borrett, R. P., and H. D. Jackson. THE WINTER QUARTERS OF *CAPRIMULGUS EUROPAEUS PLUMIPES* PRHEVALSKI. *Bull. British Ornithol. Club* 90(1): 25-26. Feb. 1970. *WR 139: 68*
The subspecies winters in south-eastern Africa.

Brackbill, H. STATUS AND BEHAVIOR OF COLOR-BANDED WHITE-BREASTED NUTHATCHES AT BALTIMORE. *Md. Birdlife* 25: 87-91. 1969. [From Auk 87(2), 1970.] *WR 139: 68*

Brown, I. L., and L. R. Mewaldt. BEHAVIOR OF SPARROWS OF THE GENUS *ZONOTRICHIA*, IN ORIENTATION CAGES DURING THE LUNAR CYCLE. *Z. Tierpsychol.* 25: 668-700. 1968. [From Auk 87(2), 1970.] *WR 139: 68*

Demaree, Salome Ross. NEST-BUILDING, INCUBATION PERIOD, AND FLEDGING IN THE BLACK-CHINNED HUMMINGBIRD. *Wilson Bull.* 82(2): 225. June 1970. *WR 139: 68*
[148 W. Rose Lane, Phoenix, Ariz.] *"Archilochus alexandri."*--Courtesy/ Paul A. Stewart.

Dinsmore, James J. COURTSHIP BEHAVIOR OF THE GREATER BIRD OF PARADISE. *Auk* 87(2): 305-321, 1 fig. Apr. 1970. *WR 139: 68*
[Univ. Fla., Gainesville.] *"Paradisaea apoda apoda."*--Courtesy/ Paul A. Stewart.

Dixon, Keith L., and Raymond A. Stefanski. AN APPRAISAL OF THE SONG OF THE BLACK-CAPPED CHICKADEE. *Wilson Bull.* 82(1): 53-62, 2 figs. Mar. 1970. *WR 139: 68*
[Univ. Toronto, Toronto, Ontario, Canada.] Singing of black-capped chickadees *(Parus atricapillus)* attracted rivals rather than repelling them. Males sang weak songs when approaching their nests or when leading their mates or fledglings. Females also sang softly in similar contexts of intrapair signalling. Song seemed to function as a summons.--Courtesy/ Paul A. Stewart.

Dixon, Keith L., Raymond A. Stefanski, and F. Neil Folks. ACOUSTIC SIGNALS IN THE MATING OF MOUNTAIN AND BLACK-CAPPED CHICKADEES. *Auk* 87(2): 322-328, 2 figs. Apr. 1970. *WR 139: 68*
[Univ. Toronto, Toronto, Ontario, Canada.] Compares various calls of *Parus gambeli* and *P. atricapillus* and postulates the ethological relevance of the differences.--Courtesy/ Paul A. Stewart.

Eddinger, C. Robert. THE WHITE-EYE AS AN INTERSPECIFIC FEEDING HELPER. *Condor* 72(2): 240. Apr. 1970. *WR 139: 68*
[Univ. Hawaii, Honolulu.] Non-breeding white-eyes *(Zosterops palpebrosa japonica)* were observed feeding nestlings and fledglings of house finches *(Carpodacus mexicanus frontalis)* and house sparrows *(Passer domesticus).*--Courtesy/ Paul A. Stewart.

Emlen, John T. HABITAT SELECTION BY BIRDS FOLLOWING A FOREST FIRE. *Ecology* 51(2): 343-345. Early Spring 1970. *WR 139: 69*
[Univ. Wis., Madison.] Counts of birds in a burned pine stand in southern Florida were about the same during the first few months after burning as in an adjacent unburned stand.--Courtesy/ Paul A. Stewart.

Enders, Frank. THE DOUBLE-SCRATCH IN THE SEASIDE SPARROW. *Wilson Bull.* 82 (2): 225. June 1970. *WR 139: 69*
[Duke Univ., Durham, N.C.] *"Ammospiza maritima."*--Courtesy/ Paul A. Stewart.

Ficken, Millicent S., and Robert W. Ficken. RESPONSES OF FOUR WARBLER SPECIES TO PLAYBACK OF THEIR TWO SONG TYPES. *Auk* 87(2): 296-304, 1 fig. Apr. 1970. *WR 139: 69*
[Univ. Wis., Milwaukee.] American redstart *(Setophaga ruticilla)*, chestnut-sided warblers *(Dendroica pensylvanica)*, and black-throated green warblers *(D. virens)* responded to song playbacks by changing their songs. Yellow warblers *(D. petechia)* did not similarly respond.--Courtesy/ Paul A. Stewart.

Guillou, J.-J. CONTRIBUTION À L'ÉTUDE ORNITHOLOGIQUE DE LA RÉGION QUIMPÉROISE ET DU SUD FINISTÈRE. [CONTRIBUTION TO THE ORNITHOLOGIC STUDY OF THE QUIMPER REGION AND SOUTH FINISTERE (FRANCE).] *Alauda* 36(3): 136-156. 1968. [From Biol. Abstr. 51(5), 1970. In French.] *WR 139: 69*
Distribution, migratory patterns, and nesting habits of 90 spp.

Halliday, Kenneth C. R. NOTES ON A GREAT GREY SHRIKE WINTERING IN LANARKSHIRE. *Scottish Birds* 6(1): 22-23. Spring 1970. *WR 139: 69*
Food items included a chaffinch, a vole, and a frog.

Hewson, Raymond. WINTER HOME RANGE AND FEEDING HABITS OF A GREAT GREY SHRIKE IN MORAYSHIRE. *Scottish Birds* 6(1): 18-22, 1 fig. + 2 pls. Spring 1970. *WR 139: 69*
Analysis of 12 pellets showed the remains of 5 field voles, 1 small bird and several invertebrates, probably beetles.

Hough, K. COURTSHIP DISPLAY BY WILLIE WAGTAIL. *Emu* 68: 282. 1969. [From Auk 87(2), 1970.] *WR 139: 69*
"Rhipidura leucophrys."

Ickes, Roy A., and Millicent S. Ficken. AN INVESTIGATION OF TERRITORIAL BEHAVIOR IN THE AMERICAN REDSTART UTILIZING RECORDED SONGS. *Wilson Bull.* 82 (2): 167-176, 2 figs. June 1970. *WR 139: 69*
[Washington & Jefferson Coll., Washington, Pa.] Before the male American redstart *(Setophaga ruticilla)* was mated, the central area of his territory was most vigorously defended; after mating, all parts were defended equally.--Courtesy/ Paul A. Stewart.

Jackson, Jerome A. A QUANTITATIVE STUDY OF THE FORAGING ECOLOGY OF DOWNY WOODPECKERS. *Ecology* 51(2): 318-323, 4 figs. Early Spring 1970. *WR 139: 69*
[Univ. Kans., Lawrence.] Studies of the foraging ecology of downy woodpeckers *(Dendrocopos pubescens)* at the University of Kansas Natural History Reservation indicate that there is intersexual partitioning of the foraging niche, seasonal variation in the relative frequency of the modes of foraging, variation in the mode of foraging on live versus dead trees, and seasonal variation in the use of live and dead trees.--From abstr. Courtesy/ Paul A. Stewart.

Jenkinson, Marion Anne, and Robert M. Mengel. INGESTION OF STONES BY GOATSUCKERS (CAPRIMULGIDAE). *Condor* 72(2): 236-237. Apr. 1970. *WR 139: 69*
[Univ. Kans., Lawrence.] Nine of 15 spp. were found to ingest grit, presumably to aid in grinding the heavy chitinous bodies of beetles which form a large part of their diet.--Courtesy/ Paul A. Stewart.

King, Warren B., and Cameron B. Kepler. ACTIVE ANTING IN THE PUERTO RICAN TANAGER. *Auk* 87(2): 376-378. Apr. 1970. *WR 139: 70*
[Cornell Univ., Ithaca, N.Y.] *"Nesospingus speculiferus."*

Knecht, S., and U. Scheer. LAUTÄUSSERUNG UND VERHALTEN DES AZOREN-BUCHFINKEN *(FRINGILLA COELEBS MORELETTI* PUCHERAN*)*. [CHARACTERISTIC SONGS AND BEHAVIOR OF THE AZORES CHAFFINCH *FRINGILLA COELEBS MORELETTI* PUCHERAN.] *Z. Tierpsychol.* 25: 155-169. 1968. [From Auk 87(2), 1970. In German.] *WR 139: 70*

Laskey, Amelia R., and Martha F. Herbert. EASTERN BLUEBIRD NESTING IN 1969 AT ASHLAND CITY. *Migrant* 40(4): 81-82. Dec. 1969. *WR 139: 70*
[1521 Graybar Lane, Nashville, Tenn.] Of the 70 available nests, 62 were used. Unsuccessful eggs and young were 61% of the total. Heaviest losses were due to predation.

Ligon, J. David. BEHAVIOR AND BREEDING BIOLOGY OF THE RED-COCKADED WOODPECKER. *Auk* 87(2): 255-278, 5 figs. Apr. 1970. *WR 139: 70*
[Univ. N. Mex., Albuquerque.] Nesting cavities of red-cockaded woodpeckers *(Dendrocopos borealis)* are invariably in living pines infected with a heartwood fungus *(Fomes pini)*. Pair bonds are permanent, and the male's roosting cavity is used by the pair for nesting. The young hatch at staggered intervals, and all but one or two young die. Helpers care for the nestlings as diligently as the parents do. Young fledge at about 27 days of age but are dependent on the parents for food until they are five to six months old. The future of this species is closely linked with the fungus, *Fomes pini* and to burned-over pine forest.--Courtesy/ Paul A. Stewart.

Lissaman, P. B. S., and Carl A. Shollenberger. FORMATION FLIGHT OF BIRDS. *Science* 168(3934): 1003-1005, 3 figs. 22 May 1970. *WR 139: 70*
[Calif. Inst. Technol., Pasadena.] Abstract: Formation flight of birds improves aerodynamic efficiency. Theoretically, 25 birds could have a range increase of about 70 percent as compared with a lone bird, the advantage being more pronounced when there is a tail wind. A vee formation is required to equally distribute the drag saving, and, contrary to other statements, the lead bird does not necessarily have the most strenuous position. The angle of the predicted vee compares with that observed in nature; stability mechanisms are described which make it easy and natural for the bird to sense optimal formation.

MacRoberts, Michael H. NOTES ON THE FOOD HABITS AND FOOD DEFENSE OF THE ACORN WOODPECKER. *Condor* 72(2): 196-204, 1 fig. Apr. 1970. *WR 139: 70*
[Dept. Zool., Parks Rd., Oxford, England.] Instead of subsisting almost exclusively on stored, dried acorns, the birds eat immature and mature green acorns, flycatch, sapsuck, probably do very little boring or gleaning for insects and insect larvae, eat something associated with oak blossoms, and occasionally eat fruit, birds' eggs, and lizards.--From summ. Courtesy/ Paul A. Stewart.

Meanley, Brooke. METHOD OF SEARCHING FOR FOOD BY THE SWAINSON'S WARBLER. *Wilson Bull.* 82(2): 228. June 1970. *WR 139: 70*
[Patuxent Wildl. Res. Center, Laurel, Md.] The Swainson's warbler *(Limnothlypis swainsonii)* feeds chiefly on the ground, pushing leaves upward with its bill, or finding food on the upper surfaces of the leaves.--Courtesy/ Paul A. Stewart.

Mengel, Robert M., and Marion Anne Jenkinson. PARASITISM BY THE BROWN-HEADED COWBIRD ON A BROWN THRASHER AND A CATBIRD. *Wilson Bull.* 82(1): 74-78. Mar. 1970. *WR 139: 70*
[Univ. Kans., Lawrence.] A brown-headed cowbird *(Molothrus ater)* threw an egg of its own species from a brown thrasher's *(Toxostoma rufum)* nest, presumably failing to distinguish its egg from those of the thrasher. Two cowbird eggs were accepted by a catbird *(Dumetella carolinensis)*.--Courtesy/ Paul A. Stewart.

Morrell, Gillian M., and John R. G. Turner. EXPERIMENTS ON MIMICRY: I. THE RESPONSE OF WILD BIRDS TO ARTIFICIAL PREY. *Behaviour* 36(1-2): 116-130, 2 figs. 1970. In English with German summ. *WR 139: 71*
[Natl. Blood Transfusion Serv., Roby St., Manchester, England.]

Morse, Douglass H. TERRITORIAL AND COURTSHIP SONGS OF BIRDS. *Nature* 226 (5246): 659-661, 2 figs. 16 May 1970. *WR 139: 71*
[Univ. Md., College Park.] The male black-throated green warbler *(Dendroica virens)* sings two similar but distinct songs. In a study of island populations, song A (territorial) occurred less often and song B (courtship) initially more often among isolated males as compared to individuals in large populations. Song type appears strongly regulated by situation experience rather than heredity.

Mueller, Helmut C. CIRCLE-SOARING BY MIGRATING NIGHTHAWKS. *Wilson Bull.* 82 (2): 227. June 1970. *WR 139: 71*
[Univ. N.C., Chapel Hill.] Common nighthawks *(Chordeiles minor)* formed into large circling flocks, presumably before departure on southward migration.--Courtesy/ Paul A. Stewart.

Oliver, William W. THE FEEDING PATTERN OF SAPSUCKERS ON PONDEROSA PINE IN NORTHEASTERN CALIFORNIA. *Condor* 72(2): 241. Apr. 1970. *WR 139: 71*
[Pacific Southwest Forest & Range Expt. Sta., Berkeley, Calif.] Drilling in bark of trees by red-breasted sapsuckers *(Sphyrapicus varius daggetti)* and Williamson sapsuckers *(S. thyroideus)* was concentrated on trees earlier attached, except when feeding pressure was low. Bole wounds attracted the sapsuckers.--Courtesy/ Paul A. Stewart.

Oniki, Yoshika. ROOSTING BEHAVIOR OF THREE SPECIES OF WOODCREEPERS *(DENDROCOLAPTIDAE)* IN BRAZIL. *Condor* 72(2): 233. Apr. 1970. *WR 139: 71*
[Univ. Kans., Lawrence.] Courtesy/ Paul A. Stewart.

Sjolander, Sverre. IAKTTAGELSER OVER STORLOMMENS *(GAVIA ARCTICA* L.) ETOLOGI. [OBSERVATIONS ON THE ETHOLOGY OF THE BLACK-THROATED DIVER *(GAVIA ARCTICA).*] *Zool. Revy* 30(3-4): 89-93, illus. 1968. [From Biol. Abstr. 51(7), 1970. In Swedish with English summ.] *WR 139: 71*
[Stockholm Univ., Stockholm, Sweden.]

Steyn, Peter. MARICO FLYCATCHER TENDING TIT-BLABBLER NESTLINGS. *Ostrich* 40 (2): 51-54, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 71*
[Falcon Coll., Essexvale, Rhodesia.] *"Bradornis mariquensis* and *Parisoma subcaeruleum."*

Sugizaki, Kazuo. [BIRDS WHICH FOLLOW THE SHOAL OF BONITOES IN WATERS SOUTH OF JAPAN.] *Tori Bull. Ornithol. Soc. Jap.* 18(85): 351-355. 1968. [From Biol. Abstr. 51(13), 1970. In Japanese with English summ.] *WR 139: 71*

Sugizaki, Kazuo. [SEASONAL CHANGE OF ACTIVITY HOURS OF THE SEVEN ISLANDS THRUSH.] *Tori Bull. Ornithol. Soc. Jap.* 18(85): 348-350, illus. 1968. [From Biol. Abstr. 51(13), 1970. In Japanese with English summ.] *WR 139: 71*
"Turdus celaenops."

Terborgh, John, and Jared M. Diamond. NICHE OVERLAP IN FEEDING ASSEMBLAGES OF NEW GUINEA BIRDS. *Wilson Bull.* 82(1): 29-52. Mar. 1970. *WR 139: 71*
[Univ. Md., College Park.] Honeyeaters and lorikeets accounted for more than 90% of the use of three different species of flowers. Small fruits attracted more diverse assemblages of many families among which honeyeaters and pigeons predominated. Larger fruits were taken chiefly by pigeons. Niche overlap is restricted by aggressive supplanting of individuals, specialized feeding methods, and feeding at particular levels in the vegetational column.--Courtesy/ Paul A. Stewart.

Thompson, William L. SONG RECOGNITION BY TERRITORIAL MALE BUNTINGS *(PASSERINA)*. *Animal Behaviour* 17(4): 658-663, 2 figs. on 2 pls. Nov. 1969. *WR 139: 72*
[Wayne State Univ., Detroit, Mich.]

Thompson, William L., and Paul L. Jane. AN ANALYSIS OF CATBIRD SONG. *Jack-Pine Warbler* 47(4): 115-125, 8 figs. Dec. 1969. *WR 139: 72*
Catbirds have a large but limited repertory. Five minutes of singing by one catbird included 170 syllable patterns, and it is likely that the bird's repertory included at least 180 patterns. These patterns seem to be sung in random order.

Thut, Rudolph N. FEEDING HABITS OF THE DIPPER IN SOUTHWESTERN WASHINGTON. *Condor* 72(2): 234-235. Apr. 1970. *WR 139: 72*
[Weyerhauser Co., Longview, Wash.] The majority of the food items in the dipper's *(Cinclus mexicanus)* diet came from slow moving water.--Courtesy/ Paul A. Stewart.

Tulloch, R. J. NOTES ON THE FEEDING BEHAVIOUR OF A CAPTIVE GREAT GREY SHRIKE. *Scottish Birds* 6(1): 24-25. Spring 1970. *WR 139: 72*
Unless a possible wedging place was provided, the shrike was unable to eat prey which was too large to be swallowed whole.

Voipio, Paavo. ON "THUNDER-FLIGHTS" OF THE HOUSE MARTIN *DELICHON URBICA*. *Ornis Fennica* 47(1): 15-19. 1970. In English with Finnish summ. *WR 139: 72*
[Univ. Turku, Turku, Finland.] The house martin is known as a species reacting violently to an approaching thunderstorm by gathering in a flock and rising very high in the air. It is not impossible that an approaching thunderstorm with massive cloud formations acts as a visual stimulus releasing the behavior. Rising air currents of warm air may suffice to elicit the response through anemotaxis or thermotaxis or through both in combination. This is supported by the concentration of the "thunder-flights" in front of the thunderhead where upward currents of warm air prevail. As the vertical currents of warm air are favorable not only thermally but also in terms of food ecology, it is suggested that the house martin, which generally harvests the air plankton at higher altitudes than other swallows, is by its nature preadapted to widen its ecological niche to include rising air currents in its normal range of feeding activity. The thunder-flights have probably evolved as synchronized changes of activity for immediate and thus more effective exploitation of food energy in occasional though recurring situations. They cannot be considered as modifications of ordinary weather flights occurring during cold weather.--From summ.

Von Braun, Cecilia, Ann Charlotte Hessle, and S. Sjolander. SMALOMMENS *(GAVIA STELLATA* L.) BETEENDE UNDER UNGVARDNADSTIDEN. [BEHAVIOUR OF THE RED-THROATED DIVER *(G. STELLATA* L.) WHEN CARING FOR THE YOUNG.] *Zool. Revy* 30(3-4): 94-95. 1968. [From Biol. Abstr. 51(7), 1970. In Swedish with English summ.] *WR 139: 72*
[Stockholm Univ., Stockholm, Sweden.]

Weisbrod, A. R. FOOD PREFERENCES OF A HAND-RAISED BLUE JAY. *Wilson Bull.* 82(1): 101-102. Mar. 1970. *WR 139: 72*
[Cornell Univ., Ithaca, N.Y.] Courtesy/ Paul A. Stewart.

Wemmer, Chris. IMPALING BEHAVIOUR OF THE LOGGERHEAD SHRIKE, *LANIUS LUDOVICIANUS* LINNAEUS. *Z. Tierpsychol.* 26(2): 208-224, illus. 1969. [From Biol. Abstr. 51(5), 1970. In English with German summ.] *WR 139: 72*
[San Francisco State Coll., San Francisco, Calif.]

BIRDS--BEHAVIOR--Continued

Wilson, Mary F. FORAGING BEHAVIOR OF SOME WINTER BIRDS OF DECIDUOUS WOODS. *Condor* 72(2): 169-174. Apr. 1970. *WR 139: 73*
[Univ. Ill., Champaign.] Intersexual differences in foraging behavior among red-bellied woodpeckers *(Centurus carolinus)*, downy woodpeckers *(Dendrocopos pubescens)*, red-headed woodpeckers *(Melanerpes erythrocephalus)*, white-breasted nuthatches *(Sitta carolinensis)*, and brown creepers *(Certhia familiaris)* are considered.--Courtesy/ Paul A. Stewart.

Winkel, W. ZIRKELN BEI ZUCKERVOGEL--ARTEN (COEREBIDAE). [PRYING IN THE HONEY CREEPERS--COEREBIDAE.] *Z. Tierpsychol.* 25: 533-536. 1968. [From Auk 87(2), 1970. In German.] *WR 139: 73*
Prying seems to have evolved several times independently within the family and cannot be used as a taxonomic character.

Wittenberg, Gerhard. HÖHLEN- UND NISTKASTENBRUT BEIM EICHELHÄHER *(GARRULUS GLANDARIUS)*. [HOLE NESTING AND NEST BOX BREEDING IN THE JAY *(GARRULUS GLANDARIUS)*.] *Ornithol. Mitteil.* 22(6): 129-131, [3 figs.]. June 1970. In German. *WR 139: 73*
[Halterner Strasse 49, Recklinghauser, Germany.]

Yarrow, Ruth M. CHANGES IN REDSTART BREEDING TERRITORY. *Auk* 87(2): 359-361, 1 fig. Apr. 1970. *WR 139: 73*
[Cornell Univ., Ithaca, N.Y.] Redstarts *(Setophaga ruticilla)* maintained smaller territories while feeding nestlings.--Courtesy/ Paul A. Stewart.

Zonov, G. B., S. I. Lipin, and V. D. Sonin. [FEATURES OF THE USE OF (NESTING) HOLES BY SOME BIRDS AT FOCI OF TICK-BORNE ENCEPHALITIS IN THE ANGARA FORELAND.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 178-182. 1968. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1969, no. 8K362. Transl. of Russian abstr.] *WR 139: 73*

BIRDS--MIGRATION & BANDING REPORTS

Andras, Keve. EINIGE DATEN ÜBER DIE WINTERBEGUNG DES WESTEUROPAISCHEN EICHELHAHERS. [SOME DATA ABOUT THE WINTER MIGRATION OF THE WEST EUROPEAN JAY *(GARRULUS GLANDARIUS)*.] *Aquila* 73/74: 75-79. 1966/1967. [From Biol. Abstr. 51(4), 1970. In German.] *WR 139: 73*

Bell, D. G., and J. D. Parrack. ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1967 (BRITAIN). *Trans. Nat. Hist. Soc. Northumberland Durham Newcastle upon Tyne* 16(5): 241-274. 1968. [From Biol. Abstr. 51(12), 1970.] *WR 139: 73*
Notes on banding recoveries.

Berthold, Peter, and Alfred Berthold. ÜBER DEN HERBSTZUG DES ZILPZALPS *(PHYLLOSCOPUS COLLYBITA)* AUF DER SCHWABISCHEN ALB (SW-DEUTSCHLAND): EIN BEISPIEL ZUR DARSTELLUNG DES ZUGABLAUFES MIT HILFE VON FANGZAHLEN. [ON THE AUTUMN MIGRATION OF THE CHIFFCHAFF *(PHYLLOSCOPUS COLLYBITA)* IN THE SCHWABIAN ALPS (SOUTHWEST GERMANY): AN EXAMPLE FOR THE PRESENTATION OF MIGRATION WITH THE HELP OF TRAPPING.] *Vogelwarte* 24(3/4): 206-211, illus. 1968. [From Biol. Abstr. 51 (9), 1970. In German with English summ.] *WR 139: 73*
[Max-Planck-Inst. Verhaltensphysiol., Vogelwarte Radolfzell, Germany.]

Blyumental', T. I. [THE DEPENDENCE OF THE SPEED OF MIGRATION OF SOME PASSERINES ON THE SIZE OF INITIAL FAT DEPOSITS AND ENERGY BALANCE: DATA FROM REPEATED CATCHES OF BANDED BIRDS.] *Soobshch. Pribalt. Komis. Izuch. Migratsii Ptits Akad. Nauk Est. SSR* 5: 146-154. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I347. Transl. of Russian abstr.] *WR 139: 73*

Dexter, Ralph W. BANDING AND NESTING STUDIES OF THE CHIMNEY SWIFT, 1944-1968. *Ohio J. Sci.* 69(4): 193-213, illus. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 74*
[Kent State Univ., Kent, Ohio.]

Griffin, Donald R. THE PHYSIOLOGY AND GEOPHYSICS OF BIRD NAVIGATION. *Quart. Rev. Biol.* 44(3): 255-276. 1969. [From Biol. Abstr. 51(13), 1970.] *WR 139: 74*
[Rockefeller Univ., New York, N.Y.]

Hickling, Grace. ORNITHOLOGICAL REPORT FOR THE FARNE ISLANDS FOR 1967 (BRITAIN). *Trans. Nat. Hist. Soc. Northumberland Durham Newcastle upon Tyne* 16(5): 275-289. 1968. [From Biol. Abstr. 51(12), 1970.] *WR 139: 74*
Notes on banding recoveries.

Imre, Patkai. A MADARTANI INTEZET 1960-1966. EVI MADARJELOLESEI: XXV. GYURUZESI JELENTES. [BIRD-BANDING OF THE HUNGARIAN ORNITHOLOGICAL INSTITUTE IN THE YEARS 1960-1966. 25TH REPORT ON BIRD BANDING.] *Aquila* 73/74: 81-107. 1966/1967. [From Biol. Abstr. 51(4), 1970. In Hungarian.] *WR 139: 74*

Kumari, E. [SOME RESULTS OF TEN YEARS OF WORK BY THE BALTIC COMMISSION FOR THE STUDY OF BIRD MIGRATIONS.] *Soobshch. Pribalt. Komis. Izuch. Migratsii Ptits Akad. Nauk Est. SSR* 5: 3-15. 1968. In Russian with English summ. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I345. Transl. of Russian abstr.] *WR 139: 74*

Lebreton, Philippe. LA MIGRATION D'AUTOMNE DU ROUGEGORGE *ERITHACUS RUBECULA* AU COL DE LA GOLÈZE (HTE.-SAVOIE). [THE AUTUMN MIGRATION OF THE ROBIN REDBREAST, *ERITHACUS RUBECULA*, AT THE GOLÈZE PASS (HAUTE-SAVOIE).] *Alauda* 36(1/2): 36-51, illus. 1968. [From Biol. Abstr. 51(11), 1970. In French with English summ.] *WR 139: 74*
[Center Ornithol. Rhone-Alpes, Haute-Savoie, France.]

McLachlan, G. R. [THIRTEENTH RINGING REPORT (SOUTH AFRICA).] *Ostrich* 40(2): 37-50. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 74*

Middlemiss, Ernest. RONDEVLEI BIRD SANCTUARY / THE 17TH AND 18TH ANNUAL REPORTS...FOR THE YEARS 1968 AND 1969. *Div. Council Cape* [South Africa]. 39 p., 2 figs. + 16 pls. [1970.] *WR 139: 74*
During the two-year period nearly 5,000 birds were banded in the sanctuary. Recoveries are listed, and an annotated checklist of the species recorded in the sanctuary is included.

Moreau, Guy, and Jean-Claude Pouyet. POSSIBILITÉ DE MISE EN ÉVIDENCE DU ROLE DU SOLEIL DANS L'ORIENTATION DES PIGEONS VOYAGEURS CAPTIFS. [POSSIBILITY OF PROVING THE ROLE OF THE SUN IN THE ORIENTATION OF CAPTIVE CARRIER PIGEONS.] *Alauda* 36(1/2): 108-120, illus. 1968. [From Biol. Abstr. 51(12), 1970. In French with English summ.] *WR 139: 74*
[Sta. Biol. Eyzies, Les Eyzies, France.]

Oelke, Hans, and Hans Wolpers. MOEGLICHKEITEN UND FEHLERQUELLEN DER BESTIMMUNG DER FLUGHOEHEN VON ZUGVOEGELN UNTER ZUHILFENAHME DES FERNGLASES. [POSSIBILITIES AND SOURCES OF ERRORS IN THE DETERMINATION OF FLIGHT ALTITUDES OF MIGRATORY BIRDS BY MEANS OF FIELD GLASSES.] *Vogelwarte* 24(3/4): 201-206, illus. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 74*
[Meer weg 18, Gross Ilsede, Germany.]

Purchase, D. TWELFTH ANNUAL REPORT OF THE AUSTRALIAN BIRD-BANDING SCHEME, JULY 1965 TO JUNE 1966. *Aust. CSIRO Div. Wildl. Res. Tech. Pap.* 16: 3-54. 1969. [From Biol. Abstr. 51(4), 1970.] *WR 139: 74*
[Div. Wildl. Res., CSIRO, Melbourne, Victoria, Australia.]

Rendahl, Hialmar. ZUGVERHAELTNISSE FENNOSKANDISCHER PIEPER-ARTEN, GATTUNG *ANTHUS*. [CONDITIONS OF MIGRATION OF THE FENNO-SCANDIAN SPECIES OF THE GENUS *ANTHUS*.] *Ark. Zool.* 20(5): 409-442, illus. 1968. [From Biol. Abstr. 51(5), 1970. In German.] *WR 139: 75*

Rodionov, M. A. [A STUDY OF THE MIGRATION OF BIRDS IN THE USSR ON THE BASIS OF PHENOLOGICAL DATA.] *Soobshch. Pribalt. Komis. Izuch. Migratsii Ptits Akad. Nauk Est. SSR* 5: 31-43. 1968. In Russian with English summ. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I346. Transl. of Russian abstr.] *WR 139: 75*

Schüz, Ernst, and Wilhelm Meise. ZUM BERGRIFF DES TEILZIEHERS. [THE CONCEPT OF PARTIAL MIGRATION.] *Vogelwarte* 24(3/4): 213-217, illus. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 75*

Spaepen, J., and F. Van Cauteren. MIGRATION OF THE SKYLARK, *ALAUDA ARVENSIS* L.: NEW RESULTS. *Gerfaut* 58(1/2): 24-77, illus. 1968. [From Biol. Abstr. 51 (11), 1970. In English with Dutch and French summ.] *WR 139: 75*
["Hoog Blok", Retie, Antwerp, Belgium.]

Staaland, Hans. NOEN OBSERVASJONER AV TREKKFUGLER I NUMEDAL. [SOME OBSERVATIONS ON MIGRANT BIRDS IN NUMEDAL.] *Sterna* (Stavanger Mus.) 8(2): 65-68, illus. 1968. [From Biol. Abstr. 51(4), 1970. In Norwegian with English summ.] *WR 139: 75*

Štromar, L. [BIRD-BANDING IN 1965: 1. RESULTS OF THE BIRD-BANDING CARRIED OUT BY THE ORNITHOLOGICAL DEPARTMENT OF THE BIOLOGICAL INSTITUTE OF THE UNIVERSITY IN ZAGREB, 17TH REPORT; 2. FOREIGN RECOVERIES MADE IN YUGOSLAVIA, 13TH REPORT.] *Larus* 20: 5-27. 1968. [From Auk 87(2), 1970. In Serbo-Croatian with English summ.] *WR 139: 75*

Vacin, V. J. BANDING PURPLE MARTINS AT SILVER LAKE. *Inland Bird Banding News* 42(1): 12-15, 4 figs. Jan.-Feb. 1970. *WR 139: 75*
[Rt. 2, Box 123, Oklahoma City, Okla.] The martin house is equipped with closeable shutters to facilitate banding of adults and locals.--Courtesy/ Paul A. Stewart.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Beimborn, Don. BIRD SPECIES AND THE TENSION ZONE. *Passenger Pigeon* 32(2): 49-51, 2 figs. Summer 1970. *WR 139: 75*
[Univ. Wis., Madison.] Range limits of 14 spp. of birds are compared with Wisconsin's "tension zone", the border between prairie and forest type habitats, in an attempt to show range limit's dependency upon vegetation type.

Bell, D. G. ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1966: COMPILED FROM THE NOTES AND RECORDS OF MEMBERS OF THE NATURAL HISTORY SOCIETY OF NORTHUMBERLAND DURHAM AND NEWCASTLE UPON TYNE, THE TEESMOUTH AND TYNEMOUTH BIRD CLUBS AND OTHER OBSERVERS. *Trans. Nat. Hist. Soc. Northumberland Durham Newcastle upon Tyne* 16(4): 197-225. 1967. [From Biol. Abstr. 51(8), 1970.] *WR 139: 75*
Includes banding data for the year.

Berger, Andrew J. THE PRESENT STATUS OF THE BIRDS OF HAWAII. *Pac. Sci.* 24 (1): 29-42. 1970. [From Biol. Abstr. 51(12), 1970.] *WR 139: 75*
[Univ. Hawaii, Honolulu.]

Bock, Carl E., and James F. Lynch. BREEDING BIRD POPULATIONS OF BURNED AND UNBURNED CONIFER FOREST IN THE SIERRA NEVADA. *Condor* 72(2): 182-189, 3 figs. Apr. 1970. *WR 139: 76*

[Univ. Colo., Boulder.] Five to eight years after a forest had been burned the same density of birds was present as was on a nearby unburned area, but there were 26 spp. on the burned and 23 on the unburned area. The biomass was much greater on the burned area than on the unburned area.--Courtesy/ Paul A. Stewart.

Brown, Vinson, and Henry G. Weston, Jr. HANDBOOK OF CALIFORNIA BIRDS (Revised edition). *Naturegraph Co.* (Healdsburg, Calif.). iv + 156 p., 400 figs. + 8 pls., 5 x 8 in. 1965. Price $2.95, paper. *WR 139: 76*

This handbook describes 368 spp. of California birds, including those on offshore islands. All but a few of the species are illustrated in color or black and white. The eight color plates are grouped together for easy comparison of similar species, while line drawings are placed facing the text on the individual species. The short paragraph on each bird gives its common and scientific names, its occurrence, size, color markings, conspicuous or characteristic behavior patterns, songs and common habitat. Illustrated "keys" in the front of the book provide beginning birders with several clues to a bird's identity, including its bill shape, feet, flight pattern, food foraging behavior, habitat preference, and calls. Good for field work.

Buechner, Helmut K., and Jimmie H. Buechner. THE AVIFAUNA OF NORTHERN LATIN AMERICA: A SYMPOSIUM HELD AT THE SMITHSONIAN INSTITUTION 13-15 APRIL 1966. *Smithsonian Contrib. Zool.* no. 26. viii + 119 p., 4 figs. 1970. For sale by Supt. Documents at $3.25. *WR 139: 76*

Includes the following papers: *The meaning of environment*, Marston Bates; *The avifauna in a changing ecosystem*, William Vogt; *Changing abundance of migratory birds in North America*, John W. Aldrich and Chandler S. Robbins; *Natural vegetation and reservation prospects in northern Latin America*, L. R. Holdridge; *The future of avifauna in Guatemala and its relation to tourism*, Jorge A. Ibarra; *Effects of habitat changes on population levels of the avifauna in Honduras*, Burt L. Monroe, Jr.; *Avifauna in British Honduras*, Stephen M. Russell; *Avifauna in Panama*, Eugene Eisenmann; *Avifauna in Nicaragua*, Thomas R. Howell; *Mexico: avifauna and modification of habitat*, Rodolfo Hernandez Corzo; *Avifauna in Mexico*, Allan Phillips; *Avifauna in Venezuela*, William H. Phelps, Jr.; *Effects of the environmental changes on the avifauna of the Republic of Colombia*, Antonio Olivares; and *Avifauna in Colombia*, F. C. Lehmann.

Clancey, P. A. A CATALOGUE OF BIRDS OF THE SOUTH AFRICAN SUB-REGION. SUPPLEMENT NO. 1. *Durban Mus. Novit.* 8: 275-324. 1969. [From Auk 87(2), 1970.] *WR 139: 76*

La Commission Pour L'Avifauna Belge. AVIFAUNE DE BELGIQUE. LISTE DES ESPÈCES D'OISEAUX OBSERVÉS EN BELGIQUE ET LEURS FORMES GÉOGRAPHIQUES. [AVIFAUNA OF BELGIUM. LIST OF SPECIES OF BIRDS OBSERVED IN BELGIUM AND THEIR GEOGRAPHICAL FORMS.] *Gerfaut* 57(3/4): 365-465. 1967. [From Biol. Abstr. 51(7), 1970. In French.] *WR 139: 76*

[Inst. Roy. Sci. Nat. Belgique, 31 rue Vautier, Bruxelles, Belgium.]

Erard, C., J. J. Guillou, D. Meininger, and J. Vielliard. CONTRIBUTION À L'ÉTUDE DES OISEAUX DU NORD-EST DE LA FRANCE. [CONTRIBUTION TO THE STUDY OF THE BIRDS OF THE NORTHEAST OF FRANCE.] *Alauda* 36(1/2): 83-107. 1968. [From Biol. Abstr. 51(11), 1970. In French.] *WR 139: 76*

Fremming, Odd Reidar, and Tore Slagsvold. FUGLEFAUNAEN I ATNASJOFELTET. [THE BIRD FAUNA IN THE ATNASJO AREA (NORWAY).] *Fauna* (Oslo) 21(3): 179-192, illus. 1968. [From Biol. Abstr. 51(1), 1970. In Norwegian with English summ.] *WR 139: 76*

[Melumveien 48 Oslo 7, Oslo, Norway.]

Gibson, Daniel D. RECENT OBSERVATIONS AT THE BASE OF THE ALASKA PENINSULA. *Condor* 72(2): 242-243. Apr. 1970. *WR 139: 77*
[P.O. Box 1551, Fairbanks, Alaska.] With observations on occurrence of 17 spp.--Courtesy/ Paul A. Stewart.

Godfrey, W. Earl. THE BIRDS OF CANADA. *Queen's Printer* (Ottawa, Canada). 428 p., 71 figs. + 69 pls., 8.75 x 11.25 in. 1966. Price $12.00. *WR 139: 77*
All the bird species known by the author to occur, or to have occurred in Canada up to January 1, 1964, have been included, a total of 519 spp. For each species the most authoritative and up-to-date English, French, and scientific names are provided. More than 420 spp. are illustrated in color, some in several plumages. The text provides plumage descriptions for adult males, females, and juveniles; measurements; field marks; and preferred habitats for each species. Breeding distribution range maps and a short description of nesting habits are given for more than 350 spp. that nest in Canada.

Hadley, Neil F. MICROENVIRONMENTAL FACTORS INFLUENCING THE NESTING SITES OF SOME SUBALPINE FRINGILLID BIRDS IN COLORADO. *Arctic Alpine Res.* 1(2): 121-126, illus. 1969. [From Biol. Abstr. 51(4), 1970.] *WR 139: 77*
[Univ. Colo., Boulder.] *"Junco caniceps, Melospiza lincolni, Zonotrichia leucophrys."*

Hauri, Rolf. DIE VOGELWELT DER ELFENAU BEI BERN. [THE BIRD WORLD OF THE ELFENAU NEAR BERN.] *Ornithol. Beob.* 65(4/5): 133-186, illus. 1968. [From Biol. Abstr. 51(1), 1970. In German.] *WR 139: 77*

Hayward, Kenneth J. FAUNA DEL NOROESTE ARGENTINO: I. LAS AVES DE GUAYAPA (LA RIOJA). [FAUNA OF NORTHEAST ARGENTINA. I. THE BIRDS OF GUAYAPA (LA RIOJA).] *Acta Zool. Lilloana* 22: 211-220. 1967. [From Biol. Abstr. 51(4), 1970. In Spanish with English summ.] *WR 139: 77*
[Inst. Miguel Lillo, Tucuman, Argentina.]

Hickling, Grace. ORNITHOLOGICAL REPORT FOR THE FARNE ISLANDS FOR 1966. *Trans. Nat. Hist. Soc. Northumberland Durham Newcastle upon Tyne* 16(4): 226-240. 1967. [From Biol. Abstr. 51(8), 1970.] *WR 139: 77*
Includes banding data for the year.

Hyla, Werner. DER VOGELBESTAND EINER UM DIE JAHRHUNDERTWENDE ERRICHTETEN WERKSIEDLUNG. [THE STATUS OF BIRDS IN A HUNDRED-YEAR-OLD-ESTABLISHED SETTLEMENT.] *Ornithol. Mitteil.* 22(4): 80-81, 1 fig. Apr. 1970. In German. *WR 139: 77*
[Strassenburger Strasse 151, Oberhausen, Germany.]

Jehl, Joseph R., Jr., and Blanche A. Smith. BIRDS OF THE CHURCHILL REGION, MANITOBA. *Manitoba Mus. Man & Nature Spec. Publ.* no. 1. 87 p., [17 figs.]. June 1970. Price $2.50. *WR 139: 77*
[Natl. Hist. Mus., San Diego, Calif.] A brief description of area habitat and a historical study of land use around Churchill, Manitoba, is given. Included is an annotated list of 209 spp. giving maximum counts, periods of abundance, egg dates, and arrival and departure dates. Information on fall migration is incomplete.

Johnston, David W. HIGH DENSITY OF BIRDS BREEDING IN A MODIFIED DECIDUOUS FOREST. *Wilson Bull.* 82(1): 79-82. Mar. 1970. *WR 139: 77*
[Univ. Fla., Gainesville.] Recorded 80 pairs of 22 spp. on 10 acres.--Courtesy/ Paul A. Stewart.

Kazama, Tatsuo. [NOTES ON THE BIRDS OF KASHIWAZAKI, NIIGATA PREFECTURE.] *Misc. Repts. Yamashina's Inst. Ornithol.* 5(4): 370-396, illus. 1968. [From Biol. Abstr. 51(1), 1970. In Japanese with English summ.] *WR 139: 77*

Kumerloeve, H. RECHERCHES SUR L'AVIFAUNE DE LA REPUBLIQUE ARABE SYRIENNE ESSAI D'UN APERCU [CONTINUED]. [RESEARCH ON THE AVIAN FAUNA OF THE ARAB REPUBLIC OF SYRIA. A SURVEY (CONTINUED).] *Alauda* 36(3): 190-207. 1968. [From Biol. Abstr. 51(5), 1970. In French.] *WR 139: 78*

Kvaerne, Mathis. FOKSTUMYRAS FUGLEFAUNA 1964-1967. [THE BIRD FAUNA OF FOKSTUA 1964-1967, (CENTRAL S. NORWAY).] *Sterna* (Stavanger Mus.) 8(2): 49-64, illus. 1968. [From Biol. Abstr. 51(4), 1970. In Norwegian with English summ.] *WR 139: 78*

Larsson, T. LAND USE AND BIRD FAUNA ON SHORES IN SOUTHERN SWEDEN. *Oikos* 20: 136-155. 1969. [From Auk 87(2), 1970.] *WR 139: 78*

McCaskie, Guy. SHOREBIRD AND WATERBIRD USE OF THE SALTON SEA. *Calif. Fish & Game* 56(2): 87-95. Apr. 1970. *WR 139: 78*
[Imperial Beach, Calif.] Abstract: The Salton Sea, California, has a rich avifauna. Thirty-five species of shorebirds and 47 species of waterbirds, exclusive of swans, ducks, geese, cranes, and rails, have been recorded. Birds are particularly abundant during migration periods. A complete listing of birds is given, together with comments on abundance and seasonal occurrence.

Mendelsohn, H. P., and J. M. Mendelsohn. LIST OF THE BIRDS OF WARMBATHS, TRANSVAAL. *South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol.* no. 66. 42 p. 1969. Price 40¢. *WR 139: 78*
Annotated list of 334 spp.

Michurin, L. N., and O. N. Mironenko. [THE BIRDS OF THE CENTRAL PART OF THE PUTORAN MOUNTAINS.] *Trudy Nauch.-Issled. Inst. Sel's. Khoz. Krainego Sev.* 15: 203-206. 1968. [From Biol. Abstr. 51(2), 1970, from Referat. Zhur., Biol., 1969, no. 5I353. Transl. of Russian abstr.] *WR 139: 78*

Nekipelov, N. V. [ECOLOGICAL GROUPINGS OF TERRESTRIAL BIRDS IN THE PRINCIPAL TYPES OF LANDSCAPES OF THE USSR.] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost.* 27: 144-162. 1968. [From Biol. Abstr. 51 (9), 1970, from Referat. Zhur., Biol., 1969, no. 8I354. Transl. of Russian abstr.] *WR 139: 78*

Nielsen, Bent Pors. FURTHER SPRING OBSERVATIONS ON THE BIRDS OF GILAN, NORTHERN IRAN. *Dansk Ornithol. Foren. Tidsskr.* 63(1): 50-73, illus. 1969. [From Biol. Abstr. 51(13), 1970. In English with Danish summ.] *WR 139: 78*
[Hans Knudsens Plads 111, Copenhagen, Denmark.]

Phillips, Allan, Joe Marshall, and Gale Monson. THE BIRDS OF ARIZONA. *Univ. Ariz. Press* (Tucson). xviii + 220 p. + 12 pls. + 32 p. color photos, 9.25 x 12.25 in. 1964. Price $15.00. *WR 139: 78*
More than 400 spp. of birds inhabit Arizona's varied life zones, from the Sonoran Desert to the Arctic-Alpine zone of sedge meadows above timberline. This first comprehensive work on Arizona's birds concentrates on establishing records in the state, describing typical habitat where the species may be found, and recording nesting seasons, differences in plumages, and some noteworthy behavior traits. All the 424 spp. which are represented from Arizona by museum specimens are given a designating serial number; uncertain records are included, but are unnumbered and in brackets. The book is illustrated with 64 full-color reproductions of action photographs by Eliot Porter and field sketches by George Miksch Sutton, and with 126 distribution maps of residents and breeding birds.

Rettig, Klaus. AUS DER BRUTVOGELWELT NORDWEST-OSTFRIESLANDS IM JAHRE 1969. [ON THE BREEDING BIRDS IN NORTHWEST-EAST FRIESLAND IN 1969.] *Ornithol. Mitteil.* 22(5): 100. May 1970. In German. *WR 139: 78*
[Danziger Strasse 11, Emden, Germany.]

Robin, Paul. L'AVIFAUNE DE L'IRIKI (SUD-MAROCAIN). [THE AVIAN FAUNA OF IRIKI (SOUTH MOROCCO).] *Alauda* 36(4): 237-253. 1968. [From Biol. Abstr. 51 (5), 1970. In French.] *WR 139: 79*

[Hôp. Avenzvar, Marrakesh, Morocco.] Number of nesting species increased from 6 to 11 during a period of increased rainfall 1966-68.

Schenk, Helmar. ZUR VOGELWELT EINIGER STAUSEEN AUF SARDINIEN. [ON THE AVIFAUNA OF SARDINIAN RESERVOIRS.] *Ornithol. Mitteil.* 22(2): 41-44. Feb. 1970. In German. *WR 139: 79*

[Königswinterer Strasse 14, Bonn-Bad Godesberg, Germany.]

Schoennagel, Erich. ORNITHOLOGISCHE BEOBACHTUNGEN AUF BORKUM IM JANUAR 1970. [ORNITHOLOGICAL OBSERVATIONS AT BORKUM (EAST FRISIAN ISLANDS) DURING JANUARY 1970.] *Ornithol. Mitteil.* 22(4): 76-78. Apr. 1970. In German. *WR 139: 79*

[Am. Meisenbrink 14, Hameln, Germany.]

Setina, M. BEITRAGE ZUR KENNTNIS DER VOGELWELT VON DER UMGEBUNG VON SLAVONSKI BROD. DIE FISCHTEICHE VON JELAS-POLJE. [CONTRIBUTION TO THE KNOWLEDGE OF THE BIRDLIFE IN THE REGION OF SLAVONSKIBROD. THE FISH PONDS OF JELAS-POLJE.] *Larus* 20: 101-110. 1968. [From Auk 87(2), 1970. In Serbo-Croatian with German summ.] *WR 139: 79*

Skead, David M. A PRELIMINARY LIST OF THE BIRDS OF THE CHRISTIANA DISTRICT, TRANSVAAL. *South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol.* no. 67. 17 p. 1970. Price 30¢. *WR 139: 79*

[Transvaal Dept. Nat. Conserv.]

Stokes, Ted, and Keith Shackleton. BIRDS OF THE ATLANTIC OCEAN. *Macmillan* (New York). 156 p., illus., 9.5 x 11.75 in. 1968. Price $12.95. *WR 139: 79*

"This magnificent book offers the most complete collection of illustrations of ocean birds ever published." Illustrated by 15 reproductions of oil paintings of birds, it is supplemented by 23 plates of gouache drawings composed as a series of group portraits which accentuate the identifying features of the birds. The various families of ocean birds are introduced and the features of the species such as identifying marks, wing span, number and color of its eggs, nesting habits, known breeding range, probable limits of its nonbreeding range and other informative points are discussed.

Sutton, George Miksch. OKLAHOMA BIRDS. *Univ. Okla. Press* (Norman). xiv + 674 p., 30 figs. + 1 pl., 6.25 x 9.5 in. 1967. Price $9.95. *WR 139: 79*

"In one large volume, one of the best known of American ornithologists presents all that is presently known about the ecology and distribution of Oklahoma birds. Discussed are more than four hundred avian species which have been listed for the state. Those which have been *taken* in Oklahoma are given 'full status' and numbered. Many records for adjoining states are cited. The book is intended as a sound reference work for the thousands of interested birdlovers in Oklahoma and the Southwest, for ornithologists and students of the subject throughout the world, and for all who are continuing their research on the species here listed."

van Tets, G. F. QUANTITATIVE AND QUALITATIVE CHANGES IN HABITAT AND AVIFAUNA AT SYDNEY AIRPORT. *CSIRO Wildl. Res.* 14(2): 117-128, 1 fig. Dec. 1969. *WR 139: 79*

[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: From January 1964 to June 1968 counts were made of the birds seen during the middle of the day at Sydney Airport. Numbers and varieties of birds declined after the following measures were taken: exposure of household refuse near the airport was stopped; airfield drainage was improved; frequency of mowing the airfield was increased; and the airfield was treated with insecticide. There was also a corresponding decrease in reports of bird strikes, and of bird strike damage to aircraft. The numbers of five bird species of about equal size which were killed by aircraft during this period were found to be positively related to the cube roots of their

average numbers on the airfield. The implication of this relationship is that bird control measures may be able to produce significant reductions in the incidences of bird strikes only if bird numbers on the airfield are reduced by at least 80%.

Weller, Milton W., David L. Trauger, and Gary L. Krapu. BREEDING BIRDS OF THE WEST MIRAGE ISLANDS, GREAT SLAVE LAKE, N.W.T. *Canadian Field-Naturalist* 83 (4): 344-359, 11 figs. Oct.-Dec. 1969. *WR 139: 80*
[Iowa State Univ., Ames.]

Williamson, Kenneth. BIRD COMMUNITIES IN WOODLAND HABITATS IN WESTER ROSS, SCOTLAND. *Quart. J. Forest.* 63(4): 305-328, illus. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 80*

Wink, Michael. ZUR AVIFAUNA VON TORNE LAPMARK (SCHWEDISCH-LAPPLAND). [ON THE AVIFAUNA OF TORNE LAPMARK (SWEDISH LAPLAND).] *Ornithol. Mitteil.* 22(6): 113-120, 1 fig. June 1970. In German. *WR 139: 80*
[F.-A. Schmidtweg 39, Bonn, Germany.] Annotated list of 96 spp.

Winterbottom, J. M. A LIST OF THE BIRDS OF THE RICHMOND DISTRICT, CAPE. *South African Avifauna Ser. Percy Fitzpatrick Inst. African Ornithol.* no. 68. 17 p. 1970. Price 20¢. *WR 139: 80*
[Univ. Cape Town, Cape Town, South Africa.]

Zhordaniya, R. G., and G. S. Gogilashvili. [THE BIRDS OF THE LIKHSK MOUNTAINS AND ADJOINING AREAS.] *Metsniereba* (Tiflis). 72 p., illus. 1969. Price 32 kopecks. [From Biol. Abstr. 51(13), 1970, from Referat. Zhur., Biol., 1969, no. 10I356 K. Transl. of Russian abstr.] *WR 139: 80*

BIRDS--POPULATIONS & FLUCTUATIONS

Blake, Charles H. PURPLE FINCH POPULATIONS. *Inland Bird Banding News* 42(1): 16-17. Jan.-Feb. 1970. *WR 139: 80*
Wing measurements of three widely separated populations of purple finches indicate probable discrete origins; however, chances of assigning a single individual to one of the populations by this means are very poor.--Courtesy/ Paul A. Stewart.

Brown, Jerram L. THE BUFFER EFFECT AND PRODUCTIVITY IN TIT POPULATIONS. *Am. Nat.* 103(932): 347-354, illus. 1969. [From Biol. Abstr. 51(2), 1970.] *WR 139: 80*
[Univ. Rochester, Rochester, N.Y.]

Budd, G. M. FURTHER POPULATION GROWTH IN THE HEARD ISLAND KING PENGUINS. *Auk* 87(2): 366-367. Apr. 1970. *WR 139: 80*
[Univ. Sydney, New South Wales.] One colony of king penguins (*Aptenodytes patagonica*) increased from 14 chicks and 6 eggs in 1963 to 98 chicks and 5 eggs in 1969. The breeding population at Spit Bay as a whole has grown almost linearly since 1963, at the rate of about 11 pairs per year.--Courtesy/ Paul A. Stewart.

Condee, Ralph W. THE WINTER TERRITORIES OF TUFTED TITMICE. *Wilson Bull.* 82 (2): 177-183, 1 fig. June 1970. *WR 139: 80*
[Pa. State Univ., University Park.] Discusses "territory" sizes and winter flock organization of *Parus bicolor*.--Courtesy/ Paul A. Stewart.

Cook, Robert E. A COMPILATION OF TEN YEARS OF CHRISTMAS BIRD COUNTS IN GEORGIA, 1958-67. *Oriole* 34(3): 45-54. Sept. 1969. *WR 139: 80*
[Yale Univ., New Haven, Conn.]

Diamond, Jared M. AVIFAUNAL EQUILIBRIA AND SPECIES TURNOVER RATES ON THE CHANNEL ISLANDS OF CALIFORNIA. *Proc. Natl. Acad. Sci. USA* 64(1): 57-63, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 81*
[Univ. Calif., Los Angeles.]

Eriksson, Kalervo. LINTUHARRASTUKSEN KEHITYS JA HAVAINTOJEN MÄÄRÄ SUOMESSA. [DEVELOPMENT OF ORNITHOLOGICAL ACTIVITY IN FINLAND AND ITS EFFECT ON THE NUMBER OF RECORDS.] *Ornis Fennica* 47(1): 20-29, 23 [figs.]. 1970. In Finnish with English summ. *WR 139: 81*
[Alkon Tutkimuslaboratorio, pl. 10350, Helsinki, Finland.] The increase in the number of observers also leads to an increase in the number of records even of scarce birds giving the impression of a great increase in the number of these birds.--From summ.

Erskine, Anthony J. THE CO-OPERATIVE BREEDING BIRD SURVEY IN CANADA, 1966-1969. *Canadian Wildl. Serv. Progress Notes* no. 15. 19 p. Apr. 1970. In French and English. *WR 139: 81*
[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Similar established study routes are compared on a year-to-year basis to determine general population trends. Results are given in nine tables.

Fowler, D. K. THE RELATIONSHIP OF LATE SUMMER POST-BREEDING BIRD POPULATIONS TO VEGETATION IN SOUTHERN APPALACHIAN FOREST RECREATION AREAS. *M.S. thesis, Va. Polytech. Inst.* 116 p. 1970. *WR 139: 81*

Hamilton, R. E. SUMMARY OF CHRISTMAS BIRD COUNTS ON SAPELO ISLAND, 1958-68. *Oriole* 34(3): 33-44. Sept. 1969. *WR 139: 81*
[704 Greenwood Drive, Dalton, Ga.] "East of Meridian, Georgia."

Hanebrink, Earl L., and Allen Rhodes. A STUDY OF FALL MIGRATORY BIRD POPULATIONS IN SEWAGE PONDS. *Migrant* 40(4): 73-78, 1 fig. Dec. 1969. *WR 139: 81*
[Ark. State Univ., State University.] The three sewage lakes served as a resting stop for 35 spp. of migrating waterfowl during the 1968 fall migration.

Hilden, Olavi. DIE INVASION DER LAPPLANDMEISE, *PARUS CINCTUS*, IN FINNLAND 1963/64. [THE INVASION OF THE LAPLAND SPECIES OF TITMOUSE, *PARUS CINCTUS*, INTO FINLAND IN 1963/64.] *Vogelwarte* 24(3/4): 189-198. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 81*
[Univ. Helsinki, Helsinki, Finland.]

Hogstad, Olav. SAMMENLIGNING AV KVANTITATIVE FUGLEUNDERSOKELSER I 1966 OG 1967 I SUBALPINT MILKO I SOR-TRONDELAG. [COMPARISON OF QUANTITATIVE BIRD INVESTIGATIONS IN 1966 AND 1967 IN A SUBALPINE REGION IN SOR-TRONDELAG (SOUTH NORWAY).] *Sterna* (Stavanger Mus.) 8(2): 81-90, illus. 1968. [From Biol. Abstr. 51(4), 1970. In Norwegian with English summ.] *WR 139: 81*
[Univ. Oslo, Oslo, Norway.]

Kuroda, Nagahisa. [A WINTER HILL BIRD CENSUS AT SOUTHWEST SKIRTS OF TOKYO: AN EXAMPLE OF CENSUS ANALYSIS.] *Misc. Repts. Yamashina's Inst. Ornithol.* 5(4): 337-350, illus. 1968. [From Biol. Abstr. 51(4), 1970. In Japanese with English summ.] *WR 139: 81*
[Yamashina's Inst. Ornithol., Tokyo, Japan.]

Lippens, Leon. INVASION DE TARINS *(CARDUELIS SPINUS)* AU LITTORAL BELGE EN HIVER 1965-1966. RESERVE DU ZWIN A KNOKKE-SUR-MER (51° 21' N., 3° 18' E.). [INVASION OF SISKINS *(CARDUELIS SPINUS)* ALONG THE BELGIAN COAST IN THE WINTER 1965-1966: ZWIN WILD LIFE PRESERVE AT KNOKKE-SUR-MER (51° 21' N., 3° 18' E.).] *Gerfaut* 58(1/2): 3-23, illus. 1968. [From Biol. Abstr. 51(11), 1970. In French with Dutch and English summ.] *WR 139: 81*
[Boslaan 43, Knokke, Belgium.]

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BIRDS--POPULATIONS & FLUCTUATIONS--Continued

McNeil, R. LA TERRITORIALITÉ: MÉCANISME DE RÉGULATION DE LA DENSITÉ DE POPULATION CHEZ CERTAINS PASSÉRIFORMES DE QUÉBEC. [TERRITORIALITY: MECHANISM OF REGULATION OF POPULATION DENSITIES OF CERTAIN PASSERIFORMES OF QUEBEC.] *Nat. Canadien* 96: 1-35. 1969. [From Auk 87(2), 1970. In French with English abstr.] *WR 139: 82*
[Univ. Montreal, Montreal, Quebec, Canada.]

Pennycuick, L. A COMPUTER MODEL OF THE OXFORD GREAT TIT POPULATION. *J. Theoret. Biol.* 22: 381-400. 1969. [From Auk 87(2), 1970.] *WR 139: 82*

Preuss, Niels Otto. INVASION AF SILKEHALER *(BOMBYCILLA GARRULUS)* I DANMARK 1966-67. [INFLUX OF WAXWINGS *(BOMBYCILLA GARRULUS)* IN DENMARK 1966-67.] *Dansk Ornithol. Foren. Tidsskr.* 63(1): 45-49, illus. 1969. [From Biol. Abstr. 51 (9), 1970. In Danish with English summ.] *WR 139: 82*
[Zool. Mus., Copenhagen, Denmark.]

Rea, Amadeo M. STATUS OF THE SUMMER TANAGER ON THE PACIFIC SLOPE. *Condor* 72(2): 230-233. Apr. 1970. *WR 139: 82*
[Univ. Ariz., Tucson.] *Piranga rubra* on the Pacific slope of the United States.--Courtesy/ Paul A. Stewart.

Shark, Brian. A POPULATION ESTIMATE OF THE DUSKY SEASIDE SPARROW. *Wilson Bull.* 82(2): 158-166, 2 figs. June 1970. *WR 139: 82*
[Univ. Wis., Madison.] The living population of male dusky seaside sparrows *(Ammospiza nigrescens)* was estimated at less than nine hundred.--Courtesy/ Paul A. Stewart.

Smithers, C. N., and H. J. de S. Disney. THE DISTRIBUTION OF TERRESTRIAL AND FRESHWATER BIRDS ON NORFOLK ISLAND. *Australian Zool.* 15(2): 127-140, 1 fig. 1969. *WR 139: 82*
[Australian Mus., Sydney, Australia.]

Štromar, L. [ON THE OCCURRENCE OF WAXWINGS *BOMBYCILLA GARRULUS* DURING WINTER 1965/66 IN JUGOSLAVIA.] *Larus* 20: 45-59. 1968. [From Auk 87(2), 1970. In Serbo-Croatian with German summ.] *WR 139: 82*

Udvardy, Miklos D. F. THE CONCEPT OF FAUNAL DYNAMISM AND THE ANALYSIS OF AN EXAMPLE (AVIFAUNAL DYNAMISM IN THE CARPATHIAN BASIN). *Bonner Zool. Beiträge* 1969(1/3): 1-10. 1969. In English. *WR 139: 82*
[Sacramento State Coll., Sacramento, Calif.] Bird population fluctuations for the period 1860-1960.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Becker, Kurt. UNTERSUCHUNGEN MIT SUDANSCHWARZ B ZUR BESTANDSREGELUNG VERWILDERTER HAUSTAUBEN. [INVESTIGATIONS OF THE EFFECT OF SUDAN BLACK B UPON POPULATION CONTROL OF FERAL PIGEONS.] *Z. Angewandte Zool.* 55(4): 427-446, 1 fig. 1969. In German with English summ. *WR 139: 82*
[Correnplatz 1, Berlin, Germany.] "From the results of laboratory and field trials it can be concluded that an effective population control of feral pigeons cannot be achieved by means of Sudan Black B."

Black, E. Russell, Jr., Frank M. Davis, C. A. Henderson, and W. A. Douglas. THE ROLE OF BIRDS IN REDUCING OVERWINTERING POPULATIONS OF THE SOUTHWESTERN CORN BORER, *DIATRAEA GRANDIOSELLA* (LEPIDOPTERA: CRAMBIDAE), IN MISSISSIPPI. *Ann. Entomol. Soc. Am.* 63(3): 701-706, 6 figs. May 1970. *WR 139: 82*
[Box EM, State College, Miss.] Abstract: Research was initiated in the fall of 1967 to determine the role of birds in reducing overwintering populations of *Diatraea grandiosella* Dyar in Mississippi. The yellow-shafted flicker, *Colaptes*

auratus (L.), was the only bird observed removing overwintering larvae from the base of undisturbed corn stalks. Yellow-shafted flicker predation occurred from October to March. January, the coldest month of the winters, was the month of heaviest predation. These birds removed 64.0% of the overwintering larvae during the winter of 1967-68 and 81.8% during the winter of 1968-69 from the study fields. Evidence of bird predation was observed in all fields examined in the spring surveys of 1968 and 1969. An average of 54.4% of the stalks in all fields was infested with overwintering larvae, and an average of 63.7% of these larvae was removed by the yellow-shafted flicker.--Courtesy/ Robert T. Mitchell.

Drost, R. GRUNDSÄTZLICHES ZUR ALTERSBESTIMMUNG LEBENDER SPERLINGSVÖGEL. [FUNDAMENTALS FOR THE DETERMINATION OF THE AGE OF LIVING SPARROWS.] *Vogelwarte* 25(1): 6-13, illus. 1969. [From Biol. Abstr. 51(13), 1970. In German with English summ.] *WR 139: 83*
[Inst. Vogelforsch., Wilhelmshaven, Germany.]

Ely, C. A., and T. J. Bowman. STORM MORTALITY AT A HOUSE SPARROW ROOST. *Kans. Ornithol. Soc. Bull.* 20: 6-7. 1969. [From Auk 87(2), 1970.] *WR 139: 83*
"Passer domesticus."

Eriksson, Kalervo. LEBENSDAUER UND STERBLICHKEIT DES WANDERNDEN BIRKENZEISIGS *(CARDUELIS FLAMMEA).* [AGE AND MORTALITY OF IRRUPTING REDPOLL, *CARDUELIS FLAMMEA.*] *Ornithol. Mitteil.* 22(3): 53-59, [3] figs. Mar. 1970. In German with English summ. *WR 139: 83*
[Box 10350, Helsinki, Finland.]

Imber, M. J., and B. W. Boeson. SEABIRDS FOUND DEAD IN NEW ZEALAND IN 1964. *Notornis* 16(1): 50-56. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 83*
[Dept. Int. Affairs, Wellington, New Zealand.]

Laskey, Amelia R. AUTUMN 1969 T.V. TOWER CASUALTIES AT NASHVILLE. *Migrant* 40(4): 79-80. Dec. 1969. *WR 139: 83*
[1521 Graybar Lane, Nashville, Tenn.] TV tower casualties occurred from 22 Aug. to 12 Nov. 1969 with 1,909 birds of 70 spp. being found.

McDowall, R. M. EXTINCTION AND ENDEMISM IN NEW ZEALAND LAND BIRDS. *Tuatara* 17(1): 1-12. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 83*
[Fish. Res. Div., Wellington, New Zealand.]

Palmer, Thomas K. HOUSE FINCH (LINNET) CONTROL IN CALIFORNIA. *Proc. 4th Vertebrate Pest Conf.* p. 173-178. 1970. *WR 139: 83*
[Calif. Dept. Agr., Fresno.] See Dana, *WR 139: 16.*

Ricklefs, R. E. NATURAL SELECTION AND THE DEVELOPMENT OF MORTALITY RATES IN YOUNG BIRDS. *Nature* 223: 922-925. 1969. [From Auk 87(2), 1970.] *WR 139: 83*

Rumsey, Robert L. WOODPECKER NEST FAILURES IN CREOSOTED UTILITY POLES. *Auk* 87(2): 367-369. Apr. 1970. *WR 139: 83*
[S. Forest Expt. Sta., Pineville, La.] No young hatched in 54% of 61 nests; only 23% of all eggs hatched. Tests with domestic fowl *(Gallus domesticus)* showed contact of incubating eggs with creosote to be fatal to the embryos.--Courtesy/ Paul A. Stewart.

Schwalbe, Paul Wayman. EXTINCTION AND THE REGULATION OF THE NUMBER OF BREEDING BIRD SPECIES. *Ph.D. thesis, Univ. Pa.* 52 p. 1969. [From Dissertation Abstr. 30(10B), 1970. *WR 139: 83*
Habitat area was found to be a regulator of breeding bird diversity on islands. Habitat patchiness regulated the number of species in the species pool and therefore was responsible for up to 75% of the regulation of species numbers.

Solman, Victor E. F. PHOTOGRAPHY IN BIRD CONTROL FOR AIR SAFETY. *J. Biol. Photogr. Assoc.* 37(3): 150-155, illus. 1969. [From Biol. Abstr. 51(12), 1970.] *WR 139: 84*
[Canadian Wildl. Serv., Ottawa, Canada.]

van Tets, G. F., W. J. M. Vestjens, and E. Slater. ORANGE RUNWAY LIGHTING AS A METHOD FOR REDUCING BIRD STRIKE DAMAGE TO AIRCRAFT. *CSIRO Wildl. Res.* 14 (2): 129-151, 10 figs. Dec. 1969. *WR 139: 84*
[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: Insects and spiders which congregate at night around runway lights on airfields form an attractive food source, and thus draw a wide variety of birds and bats into the flight paths of aircraft. Aircraft can be severely damaged when they strike birds or bats. If the number of insects and spiders which are concentrated by runway lighting could be substantially reduced, presumably the frequency of this type of damage to aircraft would also be reduced. It was found that orange light which excluded wavelengths shorter than 530 mμ attracted fewer insects and spiders by weight than white light of equal visibility to humans with normal vision. A reduction of 92% was achieved with a Pyrex orange runway light lens, formerly in general use in Australia but now replaced by a variety of white lenses to conform to specifications of the International Civil Aviation Organization. There are strong indications that these specifications should be amended in the interest of aviation safety to ensure that as many of the short wavelengths as possible are excluded from signal lights, and that orange should be the colour for the main runway lights.

Woulfe, M. R. REPRODUCTION INHIBITORS FOR BIRD CONTROL. *Proc. 4th Vertebrate Pest Conf.* p. 168-170. 1970. *WR 139: 84*
[G. D. Searle & Co., Chicago, Ill.] See Dana, *WR 138: 16.*

BIRDS--PARASITES & DISEASES

Khan, R. A., and A. M. Fallis. RELAPSES IN BIRDS INFECTED WITH SPECIES OF *LEUCOCYTOZOON*. *Canadian J. Zool.* 48(3): 451-455, 4 figs. May 1970. *WR 139: 84*
[Univ. Toronto, Toronto, Ontario, Canada.]

Lord, Rexford D., and Charles H. Calisher. FURTHER EVIDENCE OF SOUTHWARD TRANSPORT OF ARBOVIRUSES BY MIGRATORY BIRDS. *Am. J. Epidemiol.* 92(1): 73-78, 1 fig. July 1970. *WR 139: 84*
[Centro Panamericano Zoonosis, Casilla 23, Ramos Mejia, Argentina.] Abstract: During the summer and early autumn of 1965, activity of the viruses of eastern and western equine encephalomyelitis (EEE and WEE) was widespread on the Atlantic seaboard of the United States and resulted in the infection of many southward-bound migrating birds. Twenty-three isolations of EEE virus and four of WEE virus were made from 1,506 birds captured at seven sites along the Atlantic seaboard, from Maryland to south Florida. Of these isolations, 16 of EEE virus and two of WEE virus were from 14 species of birds actively migrating southward along the Atlantic Flyway, which ultimately leads across the Antilles to South America.

Rossi, L., and J. Vavrušková. A STUDY ON THE COURSE OF EXPERIMENTAL INFECTION WITH *M. AVIUM* IN THE *STREPTOPELIA DECAOCTA*. *Acta Vet.* 38: 435-439. 1969. In English with Czech and Russian summ. *WR 139: 84*
[Vet. Res. Inst., Brno, Czechoslovakia.] Abstract: A study was made on the susceptibility of the *Streptopelia decaocta* to infection with *M. avium*. A total of 18 birds were infected experimentally with *M. avium* by the oral, conjunctival, intramuscular or intraperitoneal route and observed for 154 days. From this study it appears that the *Streptopelia decaocta* is less susceptible to infection with *M. avium* than poultry and is therefore a potential *M. avium* carrier and shedder.

Schnetter, M., H. K. Englert, K. Haas, and J. Schneider. ÜBER EINE SALMONELLEN-EPIDEMIE UNTER DEN SINGVÖGELN AN DEN FUTTERPLÄTZEN DES SCHWARZWALDES IM WINTER 1966/1967. [ON A SALMONELLA INFECTION OF SONGBIRDS AND FEEDING PLACES IN THE BLACK FOREST IN THE WINTER OF 1966/1967.] *Angew. Ornithol.* 3(2): 89-90. 1968. [From Biol. Abstr. 51(12), 1970. In German with English and French summ.] *WR 139: 85*
[Mus. Naturkunde & Tierhyg. Inst., Freiburg/Breisgau, Germany.]

Stone, Ward B., and Reginald D. Manwell. IN COMPETITION FOR BIRD LIFE: PARASITES. [N.Y.] *Conservationist* 24(4): 14-17, illus. Feb.-Mar. 1970. *WR 139: 85*
[Syracuse Univ., Syracuse, N.Y.] Popular account of blood parasites in birds.

Wilkinson, P. R. BIRDS AS PREDATORS OF TICKS IN CANADA. *Canadian Field-Nat.* 83(4): 400. Oct.-Dec. 1969. *WR 139: 85*
[Canada Dept. Agr. Res. Sta., Box 210, Kamloops, British Columbia, Canada.] *"Pica pica."*

GAME BIRDS--GENERAL

Bohl, Wayne H. A STUDY OF THE CRESTED TINAMOU OF ARGENTINA. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 131. vi + 101 p., 46 figs. Mar. 1970. *WR 139: 85*
Abstract: Detailed discussions of the crested tinamous, *Eudromia elegans elegans* and *E. e. albida*, and less detailed information about *E. e. patagonica*, include habitat preferences, climate, food and water uses, general habits and behavior, reproduction, predation, diseases and parasites. Competition with other wildlife and economic relations of crested tinamous in their native range are analyzed and, as far as possible, projected to conditions in possible regions of liberation, in the United States. Propagation techniques and trapping methods are discussed. Summarized are important considerations and recommendations for the crested tinamou as a new game bird that might be considered for experimental introduction into the western United States.

Howes, J. R. FEEDING COMMERCIAL GAME BIRDS. *Modern Game Breeding* 6(6): 18-21. Apr. 1970. *WR 139: 85*
[Texas A&M Univ., College Station.] A discussion of feeding practices for upland game birds and mallards.

Makos, John J. III, and J. Robert Smyth, Jr. A STUDY OF FERTILITY FOLLOWING INTERGENERIC CROSSES AMONG CERTAIN GALLINACEOUS BIRDS. *Poultry Sci.* 49(1): 23-29. Jan. 1970. *WR 139: 85*
[Univ. Mass., Amherst.] The incidence of fertility and its duration following an insemination was studied for both intra- and intergeneric crosses involving the chicken *(Gallus domesticus)*, pheasant *(Phasianus colchicus)*, and turkey *(Meleagris gallopavo)*. Greater infertility in the crosses was mainly the result of an increased incidence in sterile matings, as well as a reduction in the duration of fertility for the fertile matings. The percent fertility within the fertile period following a mating was affected less except for the chicken X turkey crosses. Significant differences between reciprocal crosses in fertility for all matings were observed for the chicken X turkey *($P<0.005$)* and the pheasant X turkey *($P<0.05$)*.--From summ.

QUAIL

Clements, M. EFFECTS OF TACTILE STIMULATION ON FOLLOWING BEHAVIOUR OF COTURNIX. *Quail Quarterly* 7(3): 27-29. June 1970. *WR 139: 85*
[Memorial Univ. Newfoundland, St. John's, Newfoundland, Canada.]

Francis, William J. THE INFLUENCE OF WEATHER ON POPULATION FLUCTUATIONS IN CALIFORNIA QUAIL. *J. Wildl. Mgmt.* 34(2): 249-266, 3 figs. Apr. 1970. *WR 139: 86*

[P.O. Box 374, Sandusky, Ohio.] Abstract: Age ratios of quail *(Lophortyx californicus)* in San Luis Obispo County, California, were available for 14 consecutive years. Ratios were based on hunter-shot samples averaging 672 birds per year. Weather data were compiled and a multiple linear regression of quail productivity on selected weather parameters revealed a close relationship *($P<0.01$)*. Quail productivity seemed to be a function, in order of importance, of (1) soil moisture in late April calculated from temperature and rainfall data, (2) proportion of breeding females over 1 year old, and (3) the seasonal rainfall from September to April. Three geographically isolated wild quail populations and one penned population were observed during two breeding seasons that were very different in productivity. In 1963, quail produced many young. The breeding period was characterized by intense activity and persistence of breeding effort extending, in captive birds, to production of second broods. Vegetation that year included many annual forbs growing vigorously during the breeding season. In 1964, production of quail was very low on all areas. The birds seemed to lack reproductive drive, and breeding effort terminated early. Forb vegetation that year was sparse.

Gilbreath, J. C., and Ru-Chiung Ko. SEX DIFFERENTIAL FOR BODY TEMPERATURE IN JAPANESE QUAIL. *Poultry Sci.* 49(1): 34-36. Jan. 1970. *WR 139: 86*

[Okla. State Univ., Agr. Expt. Sta., Stillwater.] Summary: Data from two separate studies were in close agreement presenting significant evidence for a sex differential in body temperature for *C. coturnix japonica*. The repeatability of individual temperature trends over the eight-week period raise the possibility of further study into the nature and heritability of these differences. There was no signigicant evidence of a correlation between rectal temperature and body weight under the conditions of this study.

Karlson, Alfred G., Charles O. Thoen, and Rube Harrington. JAPANESE QUAIL: SUSCEPTIBILITY TO AVIAN TUBERCULOSIS. *Avian Diseases* 14(1): 39-44, 4 figs. Feb. 1970. *WR 139: 86*

[Mayo Clinic, Rochester, Minn.] Summary: The Japanese quail *(Coturnix coturnix japonica)* is useful for studies of experimental avian tuberculosis. Intramuscular or intravenous inoculation of 0.01 mg of *Mycobacterium avium* results in extensive tuberculous lesions, particularly of the liver and spleen. Tuberculin tests may be done intradermally in the featherless areas ventral to the anus.

Kellogg, Forest E., Gary L. Doster, and Lonnie L. Williamson. A BOBWHITE DENSITY GREATER THAN ONE BIRD PER ACRE. *J. Wildl. Mgmt.* 34(2): 464-466. Apr. 1970. *WR 139: 86*

[Univ. Ga., Athens.] Abstract: A bobwhite *(Colinus virginianus)* population level of 1.5 birds per acre existed in November, 1968, on a 1,118-acre tract in Leon County, Florida. The following February, a population estimate yielded 1.2 birds per acre on the same area. An unusually high quail population had been present for several years. This study does not invalidate the population dynamics concept of a "saturation point" for bobwhite, but it does suggest that if such a population limit exists, it is at a level above one bird per acre.

Olson, L. D. CASE REPORT--ASPERGILLOSIS IN JAPANESE QUAIL. *Avian Diseases* 13(1): 225-227, 2 figs. Feb. 1969. *WR 139: 86*

[Univ. Mo., Columbia.]

Platt, D. R. NEST PARASITISM BY THE BOBWHITE. *Kans. Ornithol. Soc. Bull.* 19: 18. 1968. [From Auk 87(2), 1970.] *WR 139: 86*

Stempel, M. E. REMOVAL OF BRUSHY AND WOODED QUAIL HABITAT IN THREE SOUTHERN IOWA COUNTIES IN RECENT YEARS. *Proc. Iowa Acad. Sci.* 76: 217-222, 2 figs. 1969. *WR 139: 87*

[Iowa State Conserv. Comm., Ottumwa.] Abstract: In southern Iowa there are still remnants of once extensive brushy upland game cover. Cost-share and privately financed brush removal programs, however, are further reducing the amount of remaining game cover. Three counties are considered here. Davis, Monroe and Wapello counties had some federally assisted clearing on 490 farms in the past 4 years. On 14 farms (1,820 acres) in Wapello County, since 1956, 82 acres of woody cover were removed by all methods. This included 25% of the choice quality upland game cover.

Tomlinson, Roy E., and David E. Brown. OUR BOB WHITES COME HOME. *Wildl. Views* 17(3): 4-11, illus. May-June 1970. *WR 139: 87*

Extreme habitat destruction occurred across much of the masked bobwhite range in Arizona during the late 1800's and into the next century. Populations of captive quail are now being released back into suitable cover in an effort to prevent extinction of the species.

Vohra, Pran, Miriam J. Davis, and R. M. Craig. THE IMPROVEMENT OF HATCHABILITY OF COTURNIX (JAPANESE QUAIL) EGGS BY EDTA. *Poultry Sci.* 49(3): 780-783. May 1970. *WR 139: 87*

[Univ. Calif., Davis.] Summary: A level of 0.5% EDTA·Na_2·$2H_2O$ fed in corn-soybean type of poult starter diets to coturnix (Japanese quail) appeared to improve the fertility and hatchability of the total eggs which were set. This was not mediated through any changes in the Ca, Ba, Fe, Zn, Cu, Ni, and Mn contents of the eggs, or the egg shell thickness.

Winkel, Wolfgang. ÜBER DAS "EIEROLLEN" VON EIATTRAPPEN BEI ZWERGWACHTELN *(EXCALFACTORIA CHINENSIS).* [ON THE EGG ROLLING OF THE EGG DUMMIES OF PAINTED QUAIL *(EXCALFACTORIA CHINENSIS).*] *J. Ornithol.* 110(2): 209-218, illus. 1969. [From Biol. Abstr. 51(11), 1970. In German with English summ.] *WR 139: 87*

"Phasianidae."

PHEASANTS

Brüll, Heinz. STUDIEN ZUR ÄSUNG DES FASANS *(PHASIANUS COLCHICUS* SP.) IN LANDSCHAFTEN DEUTSCHLANDS, ENGLANDS UND JUGOSLAVIENS. [STUDIES OF FEEDING HABITS OF PHEASANTS *PHASIANUS COLCHICUS* IN GERMANY, ENGLAND AND JUGOSLAVIA.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 16-35, 4 figs. 1965. In German with French and English summ. *WR 139: 87*

Carnevale Mijno, Piero. REPOPULATION OF HUNTING LANDS IN ITALY WITH ARTIFICIALLY BRED PHEASANTS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 49-54. 1965. In English with French summ. *WR 139: 87*

[Cascina Costa-Mortara, Pavia, Italy.]

Heinz, Gary H., and Leslie W. Gysel. VOCALIZATION BEHAVIOR OF THE RING-NECKED PHEASANT. *Auk* 87(2): 279-295, 6 figs. Apr. 1970. *WR 139: 87*

[Patuxent Wildl. Res. Center, Laurel, Md.] Vocal calls played an important role in behavioral interactions of ring-necked pheasants *(Phasianus colchicus)* and convey information necessary in situations of danger, breeding, and care of the young. It is often possible to distinguish individual birds by structure of their calls.--Courtesy/ Paul A. Stewart.

Hessler, Edward, John R. Tester, Donald B. Siniff, and Maynard M. Nelson. A BIOTELEMETRY STUDY OF SURVIVAL OF PEN-REARED PHEASANTS RELEASED IN SELECTED HABITATS. *J. Wildl. Mgmt.* 34(2): 267-274, 2 figs. Apr. 1970. *WR 139: 87*

[Univ. Minn., Minneapolis.] Abstract: Juvenile game-farm pheasants *(Phasianus colchicus)* equipped with radio transmitters were released in optimal and

marginal habitats in southern and central Minnesota, respectively. The releases were intended to study survival rates and causes of mortality of pheasants raised and stocked in the Minnesota day-old-chick program. Of 74 birds which were tracked during the 28 days following their release, 60 (81 percent) died. Causes of death during the 28 days post-release, included predation (55), unknown (3), starvation (1), and farm machinery (1). The major predators included red-tailed hawk *(Buteo jamaicensis)*, great-horned owl *(Bubo virginianus)*, red fox *(Vulpes fulva)*, and mink *(Mustela vison)*. There was no difference in survival between birds released on the two habitat types. Survival of sexes was similar. Hens weighing less than the median weight on release survived better ($P<0.01$) than hens weighing more than the median weight. No such weight-related differential mortality was observed for cock pheasants. Fox predation was higher than scat and digestive track analyses of fox food habits would have indicated. Game-farm birds dispersed very slowly and appeared to exploit habitat edges. Factors preventing their survival appeared to be concerned with deficiencies in the behavioral repertoire.

Howells, Gareth. SOME EARLY RESULTS OF A PHEASANT POPULATION STUDY. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 81-91, 4 figs. 1965. In English with French and German summ. *WR 139: 88*
[Game Res. Sta., Fordingbridge, Hampshire, England.]

Korschgen, Leroy J., and Glenn D. Chambers. PROPAGATION, STOCKING, AND FOOD HABITS OF REEVES PHEASANTS IN MISSOURI. *J. Wildl. Mgmt.* 34(2): 274-282. Apr. 1970. *WR 139: 88*
[Mo. Dept. Conserv., Columbia.] Abstract: Attempts to establish the Reeves pheasant *(Syramticus reevesii)* as a game bird in Missouri were evaluated during the years 1956-1968. Studies included results from direct release of 19 wild-trapped birds from France, and subsequent liberation of 659 pen-reared progeny of wild-trapped pheasants. Methods used for care and maintenance of breeding stock, propagation, release of birds, and food habits are reported. Principal foods and feeding habits were ascertained from analyses of 3,600 droppings samples collected during all months over a 3-year period. Failure of birds to establish self-sustaining populations was attributed to combined intrinsic characteristics including: vulnerability to predation, lack of inherent wildness, monogamous mating habits, poor production and survival of young.

Nomsen, Richard C. LAND USE CHANGES AND THE RING-NECKED PHEASANT IN IOWA. *Proc. Iowa Acad. Sci.* 76: 223-225. 1969. *WR 139: 88*
[Iowa State Conserv. Comm., Des Moines.] Abstract: Pheasants are farm game birds and continue to thrive in diversified farming areas. Drastic land use changes in recent years have greatly altered the pheasant's environment. The acreage of safe nesting cover has decreased to only a fraction of its former abundance. Iowa's primary pheasant production cover, oats, dropped from 23% of all cropland in 1948 to only 5% in 1967. Production is poor in alfalfa and many hens are lost during the early cutting of this cover type. Herbicides decreased the value of potential nesting cover along roadsides and ditches. The bare field in winter offers little resistance to blowing snow, which decreases the effectiveness of available winter cover.

Sharpe, G. I. SOME RECENT OBSERVATIONS ON THE GAPEWORM *(SYNGAMUS TRACHEA)* IN PHEASANTS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 37-48, 8 figs. 1965. In English with French and German summ. *WR 139: 88*
[Game Res. Sta., Fordingbridge, Hampshire, England.]

GROUSE, PARTRIDGE, ETC.

Bergerud, Arthur T. VULNERABILITY OF WILLOW PTARMIGAN TO HUNTING. *J. Wildl. Mgmt.* 34(2): 282-285, 1 fig. Apr. 1970. *WR 139: 88*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: The percentage of juvenile willow ptarmigan *(Lagopus lagopus)* was determined for a

population of birds in southeastern Newfoundland in August and September for 7 years, and in the harvest in October for 8 years. Juvenile birds comprised 72 percent of the August population, 74 percent of the kill in the first week of hunting, 72 percent of the harvest in the second week, and 67 percent of the kill in the third and fourth weeks of October. The proportion of late-hatched young (July 8-August 10) was greater in the kill than in the pre-season populations. The cause of this disproportional representation may have been due to differential vulnerability of early- and late-hatched young.

Boddicker, Major L., and Ernest J. Hugghins. PARASITES OF SHARP-TAILED GROUSE IN SOUTH DAKOTA. *Proc. S. Dak. Acad. Sci.* 44: 244. 1965. *WR 139: 89*
[S. Dak. State Univ., Brookings.] Abstract only.

Braun, Clait E. POPULATION DYNAMICS, HABITAT, AND MOVEMENTS OF WHITE-TAILED PTARMIGAN IN COLORADO. *Ph.D. thesis, Colo. State Univ.* 202 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 89*
A comparison of population dynamics, habitat, and movements of hunted and unhunted populations of *Lagopus leucurus*. Factors affecting composition were production and hunting. Hunting allowed subadult males to gain breeding territories. Breeding densities were related to quality of habitat. Hunting reduced life expectancy in hunted areas, as 27 to 67% of the fall populations were harvested. Populations could be maintained by immigration from surrounding areas. Weather controlled timing of breeding and nesting events and was a major factor in determining movements and distribution in late fall, winter, and early spring.

Choate, Thomas S. REPRODUCTION AND TURNOVER IN AN UNHUNTED WHITE-TAILED PTARMIGAN POPULATION. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 393-394. 1965. In English. *WR 139: 89*
[Univ. Otago, Dunedin, New Zealand.]

Christensen, Glen C. THE CHUKAR PARTRIDGE. ITS INTRODUCTIONS, LIFE HISTORY AND MANAGEMENT. *Nev. Dept. Fish & Game Biol. Bull.* no. 4. 82 p., 28 figs. Apr. 1970. *WR 139: 89*
[Nev. Dept. Fish & Game, P.O. Box 10678, Reno.] Abstract: This is a revision of the author's previous publication on *The Chukar Partridge in Nevada* (1954) and has been expanded to include the distribution of the red-legged partridge of the world, the chukar partridge in the world, and document recent changes in the taxonomy of the chukar. Chukar introductions and success are dealt with in detail for Nevada and in general for North America, Hawaii, and New Zealand. Life history data is expanded upon to include findings from 1954 to 1970 and a large section on management has been added.

Davis, Keith. THE RUFFED GROUSE OF NORTH AMERICA. *Biol. Conserv.* 2(2): 133-137, illus. 1970. [From Biol. Abstr. 51(13), 1970.] *WR 139: 89*
[Ruffed Grouse Soc. Am., Flint, Mich.]

Harper, Harold T., and others. OPERATIONAL MANAGEMENT PLAN FOR SAGE GROUSE. *Calif. Dept. Fish & Game.* [57 p.] Jan. 1970. *WR 139: 89*
The plan considers problems of producing opportunities for hunting, observations, and photography. Criteria for setting hunting regulations are presented. Economic, scientific, and educational values are discussed.

Helminen, Matti. AGE RATIOS OF CAPERCAILLIE *(TETRAO UROGALLUS)*, AND BLACK GROUSE *(LYRURUS TETRIX)*, IN FINLAND IN THE AUTUMNS OF 1952-1962. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 75-80, 7 figs. 1965. In English. *WR 139: 89*
[Game Res. Inst., Helsinki, Finland.]

Jenkins, David, Adam Watson, and N. Picozzi. RED GROUSE CHICK SURVIVAL IN CAPTIVITY AND IN THE WILD. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 63-70, 2 figs. 1965. In English with French and German summ. *WR 139: 90*
[Banchory, Kincardineshire, Scotland.]

Johnston, Raymond E. A SURVEY OF HUNTERS IN SPRUCE GROUSE HABITAT IN MICHIGAN. *Jack-Pine Warbler* 47(4): 111-114. Dec. 1969. *WR 139: 90*
[Northern Mich. Univ., Marquette.] Most spruce grouse are killed because of the lack of ability of the hunter to identify the bird rather than through ignorance or defiance of the law protecting the bird.

Klonglan, Eugene D., and Gene Hlavka. IOWA'S FIRST RUFFED GROUSE HUNTING SEASON IN 45 YEARS. *Proc. Iowa Acad. Sci.* 76: 226-230. 1969. *WR 139: 90*
[Iowa State Conserv. Comm., Boone.]

Leonhard, Hermann. AUER-, BIRK- UND HASELWILD IN SÜDBADEN. [CAPERCAILLE, BLACK GROUSE, AND HAZEL HEN IN SOUTHERN BADEN.] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 59-60. 1965. In German. *WR 139: 90*
[Harburkweg 2, Freiburg, Germany.]

Marshall, William H., and Gordon W. Gullion. A DISCUSSION OF RUFFED GROUSE POPULATIONS CLOQUET FOREST RESEARCH CENTER, MINNESOTA. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 93-102, 2 figs. 1965. In English. *WR 139: 90*
[Univ. Minn., St. Paul.]

Martin, Neil S. SAGEBRUSH CONTROL RELATED TO HABITAT AND SAGE GROUSE OCCURRENCE. *J. Wildl. Mgmt.* 34(2): 313-320, 1 fig. Apr. 1970. *WR 139: 90*
[Mont. Fish & Game Dept., Townsend.] Abstract: The effects of chemical manipulation of big sagebrush *(Artemisia tridentata)* on sage grouse *(Centrocercus urophasianus)* were studied in Montana during the summers of 1962 through 1964. The principal study was conducted on 1,900 acres, of which 1,710 had been strip-sprayed in 1961 with 2,4-D. Vegetation analyses revealed about 80 percent grasses and 20 percent forbs in the sprayed strip, and 60 percent grasses and 40 percent forbs in the unsprayed strip. Eight and 97 percent of the individual big sagebrush plants were entirely dead in the unsprayed and sprayed strip, respectively. Only 4 percent of 415 sage grouse observations were made on the sprayed strips of the 1,900-acre study area. Canopy coverage of herbaceous vegetation at 137 sage grouse locations consisted of approximately 60 percent grasses and 40 percent forbs. Ninety-two percent of the big sagebrush plants evaluated at grouse locations were living. The similarity of vegetation at grouse locations and in the unsprayed strip led to the conclusion that differences in numbers of sage grouse observed in sprayed and unsprayed strips were related to vegetation composition. Measurements of big sagebrush at 159 grouse locations showed young broods using areas having a lesser density and lower percent crown coverage than older broods and adults. Analysis of 35 sage grouse crops revealed that sagebrush and three forbs together constituted 94.6 percent of the total volume. Dandelion *(Taraxacum officinale)* and sagebrush had the greatest total frequency of occurrence of all food items. Favored food plants were more abundant in the unsprayed than in the sprayed strip, supporting the conclusion that differences in numbers of sage grouse observed in unsprayed and sprayed strips were related to vegetation composition.

Mussehl, Thomas W., and Philip Schladweiler. FOREST GROUSE AND EXPERIMENTAL SPRUCE BUDWORM INSECTICIDE STUDIES. *Mont. Fish & Game Dept. Tech. Bull.* no. 4. vii + 53 p., [16 figs.]. 1969. *WR 139: 90*
[Mont. Fish & Game Dept., Bozeman.] Various concentrations and numbers of applications of Zectran were sprayed on forest units to study effects that the insecticide may have on forest grouse. Comparison of survival rates of banded blue grouse males on sprayed and unsprayed areas did not indicate male mortality

on either individual or combined study units. Symptoms of Zectran poisoning were not detected in any forest grouse observed after aerial spraying. Evaluation of Zectran and its effects on ruffed grouse was inconclusive. The value of telemetry for pesticide-grouse evaluations was demonstrated. The potential of telemetry to detect sublethal effects of an insecticide was demonstrated in limited experiments that monitored grouse activity and respiration changes. During field experiments, an instrumented blue grouse hen lost respiration changes. Pen tests with pheasants and three species of forest grouse (blue, ruffed and spruce) indicated the high acute oral toxicity of Zectran to birds (12.0 mg/kg or above was fatal to 25 of 31 test birds.--From summ.

Nero, Robert W. SHARP-TAILED GROUSE GIVES AGGRESSIVE DISPLAY TO AUTOMOBILES. *Wilson Bull.* 82(2): 221-222. June 1970. *WR 139: 91*
[Manitoba Mus. Man & Nature, 190 Rupert Ave., Winnipeg, Manitoba, Canada.] *"Pediocecetes phasianellus."*--Courtesy/ Paul A. Stewart.

Partch, Max. PRAIRIE CHICKEN EXODUS: NOTES ON THE PRAIRIE CHICKEN IN CENTRAL MINNESOTA. *Loon* 42(1): 5-19, 4 figs. Mar. 1970. *WR 139: 91*
[St. Cloud State Coll., St. Cloud, Minn.] Traces the history--introduction, establishment, development, and decline--of the prairie chicken in Minnesota.

Robel, Robert J., James N. Briggs, Jerome J. Cebula, Nova J. Silvy, Charles E. Viers, and Philip G. Watt. GREATER PRAIRIE CHICKEN RANGES, MOVEMENTS, AND HABITAT USAGE IN KANSAS. *J. Wildl. Mgmt.* 34(2): 286-306, 5 figs. Apr. 1970. *WR 139: 91*
[Kans. State Univ., Manhattan.] Abstract: Telemetry equipment was used to track 70 (34 males, 31 females, and 5 unsexed) individual greater prairie chickens *(Tympanuchus cupido pinnatus)* in northeastern Kansas. A total of 3,214 locations was recorded and 2,229 successive days of location data were obtained during 1964-1968. These data were used to calculate ranges of individual birds, and the distances between locations of birds on successive days were used to determine movement activity. Between 1966 and 1968, a total of 2,019 locations of 49 of the 70 birds (26 males and 23 females) was analyzed according to habitat usage. Ranges of birds were >200 acres during the late summer and <500 acres during fall and spring. Adult cocks exhibited the largest monthly range (1,267 acres) in March and the smallest (79 acres) in August. Ranges of juveniles were similar to those of adult males. Movement data reflected the same trends as did the range data. Occasional inter-booming ground movements were recorded for both males and females. Extensive movements (2.7-6.7 miles) of juveniles during October and November may represent population dispersal and may serve as a population regulatory mechanism. Attempts to correlate vegetation density with seasonal changes in habitat usage were futile. The shallow range site was used more by prairie chickens than were the limestone breaks and claypan vegetation complexes on the study area. Use of booming grounds was greater in spring and use of grain sorghum fields extensive in winter. Intensive use was made of booming ground areas in the morning, limestone breaks range site in midday, and wheat and oat fields in evening.

Shymanski, Frank. SPANISH RED-LEGS. *Modern Game Breeding* 6(8): 18. June 1970. *WR 139: 91*
A description of management techniques for captive breeding of Spanish red-leg partridge is given. Releasing of the partridge in the states of Michigan and Wisconsin was suggested.

Szwykowska, Maria Małgorzata. SEASONAL CHANGES OF THE CALORIC VALUE AND CHEMICAL COMPOSITION OF THE BODY OF THE PARTRIDGE *(PERDIX PERDIX L.). Ekologia Polska--Ser. A* 17(40): 795-809, 6 figs. 1969. In English with Polish summ. *WR 139: 91*
[Inst. Ekol. PAN, Warsaw, Poland.]

GROUSE, PARTRIDGE, ETC.--Continued

Woodard, A. E., H. Abplanalp, and W. O. Wilson. INDUCED CYCLES OF EGG PRODUCTION IN THE CHUKAR PARTRIDGE. *Poultry Sci.* 49(3): 713-717, 3 figs. May 1970. *WR 139: 92*

[Univ. Calif., Davis.] Chukar partridges were induced (recycled) to lay eggs in four successive 10-week periods of long days alternated with 6-week periods of short days.--From summ.

TURKEY

Capel, Stephen W. A NATIONWIDE SURVEY OF TURKEY MANAGEMENT WITH SPECIAL EMPHASIS ON HUNTING SEASONS AND REGULATIONS. *Kans. Forestry, Fish & Game Comm. Wildl. Bull.* no. 2. 26 p., 2 figs. 1970. *WR 139: 92*

Preparation for Kansas' first turkey season included sending questionnaires to the wild turkey study leaders in each of the 50 states. Information was requested regarding various phases of turkey management programs, especially as related to hunting seasons and regulations. Size of turkey populations, type and length of seasons, difficulties encountered in introducing new seasons, and plans of states with no hunting seasons to initiate hunting are some of the management problems discussed.

Harper, Harold T. OPERATIONAL MANAGEMENT PLAN FOR WILD TURKEYS. *Calif. Dept. Fish & Game.* [66 p.] Feb. 1970. *WR 139: 92*

This plan presents current programs of wild turkey management. Problems of disease control, range maintenance, and pesticide poisoning are considered. Hunting demands and regulations are evaluated.

Kellogg, Forest E., Annie K. Prestwood, Robert R. Gerrish, and Gary L. Doster. WILD TURKEY ECTOPARASITES COLLECTED IN THE SOUTHEASTERN UNITED STATES. *J. Med. Entomol.* 6(3): 329-330. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 92*

[Univ. Ga., Athens.]

Palmer, Walter L., Kenton L. Palmer, and Douglas A. Whitcomb. FOOD HABITS OF MICHIGAN WILD TURKEYS. *Mich. Dept. Nat. Resources Res. & Development Rept.* no. 193. 7 p. Mar. 1969. *WR 139: 92*

Food items are tabulated from 162 wild turkey crops collected in November 1966, 1967, and 1968. Acorns were the primary food item.

DOVES & PIGEONS

Bettmann, Helmut. BEOBACHTUNGEN ZUM GEMEINSCHAFTSVERHALTEN DER RINGELTAUBE *(COLUMBA PALUMBUS).* [INVESTIGATIONS OF COMMUNITY BEHAVIOR OF THE WOOD PIGEON *(COLUMBA PALUMBUS).*] *Ornithol. Mitteil.* 22(2): 39-40. Feb. 1970. In German. *WR 139: 92*

[Pestalozzistrasse, Rheydt, Germany.]

Darebnicek, B., V. Dyk, L. Sochor, and R. Zavadil. DAS HYPOPUSSTADIUM VON *FALCULIFER ROSTRATUS* BEI TÜRKENTAUBEN. [THE HYPOPIAL STAGE OF *FALCULIFER ROSTRATUS* IN COLLARED TURTLE DOVES.] *Angew. Parasitol.* 8(3): 145-150, illus. 1967. [From Biol. Abstr. 51(1), 1970. In German with Russian, English and Czech summ.] *WR 139: 92*

George, Uwe. UEBER DAS TRANKEN DER JUNGEN UND ANDERE LEBENSAEUSSERUNGEN DES SENEGAL-FLUGHUHNS, *PTEROCLES SENEGALLUS* IN MAROKKO. [ON THE WATERING OF THE YOUNG AND OTHER DAILY ACTIVITIES OF THE SAND-GROUSE *(PTEROCLES SENEGALLUS)* IN MOROCCO.] *J. Ornithol.* 110(2): 181-191, illus. 1969. [From Biol. Abstr. 51 (7), 1970. In German with English summ.] *WR 139: 92*

Hirt, Mrs. Joseph A. MOURNING DOVES USE SAME NEST SITE FOUR TIMES IN ONE SEASON. *Jack-Pine Warbler* 47(4): 131. Dec. 1969. *WR 139: 92*

[48130 West Road, Wixom, Mich.] The doves were successful each time and raised a total of eight birds at the one nest site between 22 April and 6 September 1969.

Jones, Glenn. SOME OBSERVATIONS ON THE HOMING INSTINCT OF THE MOURNING DOVE. *Proc. Iowa Acad. Sci.* 76: 241-244. 1969. *WR 139: 93*
[Iowa State Conserv. Comm., Ruthven.] Abstract: During 5 years, 1964 thru 1968, of bait trapping and banding of mourning doves, *Zenaidura macroura*, in the Ruthven area of Iowa, significant data have been compiled on the homing instinct and longevity of this bird. During this 5-year period 1,546 doves were banded. Recaptures of doves banded in previous years included 15 in 1966 and reached a high of 55 birds in 1968. Doves banded as close as the Ingham-High Game Unit, only 20 miles northeast, were not recaptured at Ruthven during the last 3 years of the study. Four birds banded in 1964 have been retaken each year. These four birds were banded as adults in 1964, therefore reaching an age of at least 5 years. Several birds were recaptured year after year following initial capture. This study indicates an instinct for the mourning dove to return to the area where hatched. Also, some doves in some areas may be longer-lived than generally thought.

Ljunggren, Lars. SEASONAL STUDIES OF WOOD PIGEON POPULATIONS / I. BODY WEIGHT, FEEDING HABITS, LIVER AND THYROID ACTIVITY. *Viltrevy* 5(9): 435-504, 25 figs. 1968. In English with Swedish abstr. *WR 139: 93*
[Univ. Lund, Lund, Sweden.] *"Columba palumbus."*

Ljunggren, Lars. SEASONAL STUDIES OF WOOD PIGEON POPULATIONS / II. GONADS, CROP GLANDS, ADRENALS AND THE HYPOTHALAMO-HYPOPHYSIAL SYSTEM. *Viltrevy* 6(2): 41-126, 25 figs. 1969. In English with Swedish abstr. *WR 139: 93*
[Univ. Lund, Lund, Sweden.] *"Columba palumbus."*

Ljunggren, Lars. STUDIES ON SEASONAL ACTIVITY IN PIGEONS WITH ASPECTS ON THE ROLE OF BIOGENIC MONOAMINES IN THE ENDOCRINE ORGANS. *CWK Gleerup/Lund.* 69 p., 20 figs. 1969. *WR 139: 93*
[Univ. Lund, Lund, Sweden.]

Murton, R. K., and S. P. Clark. BREEDING BIOLOGY OF ROCK DOVES. *British Birds* 61(10): 429-448, 2 figs. Oct. 1968. *WR 139: 93*
[Infestation Control Lab., Worplesdon, Surrey, England.] Egg-laying occurred throughout the year but only about one quarter of the population engaged in winter breeding and the main season was from March to November, with a tendency for a lull in breeding activity in June and July. Total breeding success was 46% and this showed little variation over the main breeding season, though it did decline in winter. The diet of nestlings is defined and shown to resemble that of the adults, except for containing more animal material. The discussion considers the selective advantage of the physiological loss of breeding condition by about three-quarters of the population in winter and attributes this to the need to conserve energy supplies.--From summ.

Ruos, James L., and Duncan MacDonald. MOURNING DOVE STATUS REPORT, 1968. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 129. iv + 38 p., 10 figs. Jan. 1970. *WR 139: 93*
[Migratory Bird Populations Sta., Laurel, Md.] Abstract: The Density Index of breeding doves declined in each management unit between 1967 and 1968 at the following rate: Eastern, 4 percent; Central, 2 percent; Western, 13 percent; and the entire contiguous United States, 5 percent. The management unit indexes for 1968 were below the preceding 10-year mean as follows: Eastern, 8 percent; Central, 13 percent; Western, 22 percent, and contiguous 48 United States, 13 percent. Population indexes are at the lowest levels in recent years. Regression analyses suggest that the trend in populations has been downward in all units since 1958. Although biased to an unknown degree, data collected in conjunction with the Annual Waterfowl Mail Questionnaire Survey suggest that the harvest in the United States increased 28.9 percent and that dove hunters (who also purchased duck stamps) increased 31.5 percent during the period 1965-66 through 1967-68. The increase in harvest was due chiefly to an increase in hunter numbers.

Schroeder, Max H. MOURNING DOVE PRODUCTION IN A KANSAS OSAGE ORANGE PLANTING. *J. Wildl. Mgmt.* 34(2): 344-348. Apr. 1970. *WR 139: 94*

[Denver Wildl. Res. Center, Denver, Colo.] Abstract: A mourning dove *(Zenaidura macroura)* production study was conducted during the 1962 nesting season in an osage orange *(Maclura pomifera)* planting in Ellis County, Kansas. Altogether 389 nests built by an estimated 92 pairs of doves were followed to termination between May 2 and September 11. Of these, 166 nests (43 percent) were lost to predators, storms, or abandonment. Two hundred and forty-two (32 percent) of the 766 eggs laid and 114 (22 percent) of 524 nestling doves were lost during the nesting season. Four hundred and ten nestlings were fledged, averaging 4.5 young per pair. The greatest number of active nests found at any one time was 92, a density of 17.3/acre. The fall dove hunting season resulted in the cessation of nesting activity. Doves were still in the process of nest building and incubation when the season began, but no new nests were started after this time and many active nests were deserted.

Troostwijk, W. J. Doude van. ON THE WOOD PIGEON IN THE NETHERLANDS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 359-367, 3 figs. 1965. In English with French and German summ. *WR 139: 94*

[ITBON, Arnhem, Netherlands.]

WATERFOWL

Balat, Frantisek. INFLUENCE OF REPEATED DISTURBANCE ON THE BREEDING SUCCESS IN THE MALLARD, *ANAS PLATYRHYNCHOS* L. *Zool. Listy* 18(3): 247-252, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 94*

[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Benson, Denis A. AGE AND SEX RATIOS OF DUCKS HARVESTED DURING THE 1968-69 HUNTING SEASON. *Progress Notes, Canadian Wildl. Serv.* no. 14. 24 p. Apr. 1970. In French and English. *WR 139: 94*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Age ratios are given in tables for each of the 11 most numerous species, which make up over 90% of the Canadian harvest. Sex ratios for adult birds and for immature birds are also tabulated.

Brosselin, Michel. RECENSEMENT DES ANATIDÉS HIVERNANT DANS L'OUEST. [INVENTORY OF ANATID WATERFOWL WINTERING IN THE WEST.] *Penn Bed* 6(53): 269-276, illus. 1968. [From Biol. Abstr. 51(2), 1970. In French.] *WR 139: 94*

Clark, A. THE BREEDING OF THE HOTTENTOT TEAL. *Ostrich* 40(2): 33-36. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 94*

[122 Ronketti Circle, Petersfield, Springs, Transvaal, South Africa.] *"Anas punctata."*

Cooch, F. G. THE CURRENT STATE OF THE ART. *Trans. 33rd Federal-Provincial Wildl. Conf. (Edmonton, Alberta) 8-10 July 1969.* p. 39-50. 1969. *WR 139: 94*

A review of the current status of waterfowl management in Canada.

Dindal, Daniel L., and Paul C. Stromberg. DDT RESIDUES ASSOCIATED WITH CESTODES FROM MALLARD AND LESSER SCAUP DUCKS. *Bull. Environmental Contamination & Toxicol.* 5(1): 13-15. Jan.-Feb. 1970. *WR 139: 94*

[State Univ. Coll. Forestry, Syracuse, N.Y.] Radiotagged DDT residues were found associated with 11 of the 16 tapeworm samples analyzed by liquid scintillation spectrometry. The single qualitative evaluation by gas-liquid chromatography showed the presence of DDE associated with tapeworms. Some DDT residue was found in 10 or 12 tapeworm masses obtained from lesser scaup. Only 1 tapeworm sample from mallards contained detectable concentrations; however, the mallards sampled were very low.

Dircksen, Jens. BRANDGANS-MAUSERZUG UND TIDENBEDINGTE BEWEGUNGEN VON BRANDGANS *(TADORNA TADORNA)* UND EIDERENTE *(SOMATERIA MOLLISSIMA)* IM RAUM UM TRISCHEN. [SHELDUCK MOULTING MIGRATION AND THE TIDE-CONDITIONED MOVEMENTS OF THE SHELDUCK *(TADORNA TADORNA)* AND THE EIDER *(SOMATERIA MOLLISSIMA)* IN THE AREA AROUND TRISCHEN.] *Vogelwarte* 24(3/4): 179-184, illus. 1968. [From Biol. Abstr. 51(9), 1970. In German with English summ.] *WR 139: 95*

Drewien, Rod C., and Larry F. Fredrickson. HIGH DENSITY MALLARD NESTING ON A SOUTH DAKOTA ISLAND. *Wilson Bull.* 82(1): 95-96. Mar. 1970. *WR 139: 95*
[S. Dak. Dept. Game, Fish & Parks, Aberdeen.] In two years a total of 67 nests of the mallard *(Anas platyrhynchos)* were found on a nine-acre flat. An estimated minimum of 78 and 60 nests occurred in 1967 and 1968, respectively.--Courtesy/ Paul A. Stewart.

Fruzinski, Boguslaw, and Rajmund Grudzinski. OBSERWACJE NAD UGRUPOWANIAMI KRZYZOWKI *ANAS PLATYRHYNCHOS* L., W OKRESIE JESIENNYM. [OBSERVATIONS ON THE DISPOSITION OF MALLARD *ANAS PLATYRHYNCHOS* L. IN AUTUMN.] *Notatki Ornithol.* 9 (3): 9-15, illus. 1968. [From Biol. Abstr. 51(13), 1970. In Polish with English summ.] *WR 139: 95*
[Katedra Gospod. Lowieckiego, Poznań, Poland.]

Goethe, Friedrich. UNGEWOEHNLICHE WIEDERFUNDSORTE VERPFLANZTER DEUTSCHER BRANDGAENSE *(TADORNA TADORNA)*. [UNUSUAL REOCCURRENCE OF TRANSPORTED GERMAN SHELDRAKE *(TADORNA TADORNA)*.] *Vogelwarte* 24(3/4): 187-189. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 95*
[Vogelwarte Helgoland, Wilhelmshaven, Germany.]

Harrison, Jeffery, and James Harrison. THE MANAGEMENT OF A GRAVEL PIT WILDFOWL RESERVE. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 323-331, [1 fig.]. 1965. In English with French and German summ. *WR 139: 95*

Hartsuyker, L., and B. J. Speek. 20 JAAR RINGONDERZOEK AAN ZWEMEENDEN. [20 YEARS OF BANDING STUDIES ON SWIMMING DUCKS.] *Limosa* 41(3/4): 143-146. 1968. [From Biol. Abstr. 51(1), 1970. In Dutch.] *WR 139: 95*

Herman, Carlton M. THE OCCURRENCE OF PROTOZOAN BLOOD PARASITES IN ANATIDAE. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 341-349. 1965. In English with French summ. *WR 139: 95*
[Patuxent Wildl. Res. Center, Laurel, Md.]

Hoffmann, L. SHOOTING PRESSURE ON MALLARD IN SOUTHERN FRANCE AND ITS SEASONAL EVOLUTION AS STUDIED BY X-RAY. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 271-273, 1 fig. 1965. In English. *WR 139: 95*

Hopper, Richard M., and Howard D. Funk. RELIABILITY OF THE MALLARD WING AGE-DETERMINATION TECHNIQUE FOR FIELD USE. *J. Wildl. Mgmt.* 34(2): 333-339. Apr. 1970. *WR 139: 95*
[Colo. Div. Game, Fish & Parks, Fort Collins.] Abstract: Reliability of wing feather characteristics for age determination was studied during the fall, winter, and spring on 37 hand-reared, immature mallards *(Anas platyrhynchos)* in 1965-66, and 52 immatures caught as flying birds in 1966-67, all of wild origin. All 44 males in the two samples retained immature primary coverts and middle coverts to at least March 1, while 42, or 95.4 percent, maintained immature greater tertial coverts. None of the 44 males retained immature tertials beyond late November. The 45 females in the two samples all retained immature tertials, greater tertial coverts, and middle coverts to at least March 1, while 42, or 93.3 percent, retained immature primary coverts. These observations and results of examinations of study mallards and wild-caught adult and immature birds by participants at the 1966 and 1967 Central Flyway wing-bees indicated that the mallard wing technique is valid and accurate for field use by experienced personnel until at least March 1.

Hudec, Karel, and Ivana Touskova. BREEDING DISTRIBUTION AND BIOLOGY OF THE PINTAIL, *ANAS ACUTA* LINNAEUS, 1758 IN CZECHOSLOVAKIA. *Zool. Listy* 18(3): 253-262, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 96*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.]

Impekoven, Monica. VERBREITUNG UND FLUCHTMIGRATION VON KRICKENTEN IN DEN KALTEN WINTERN 1956 UND 1962/63. EINE VERGLEICHENDE ANALYSE VON RÜCKMELDUNGEN IN LA TOUR DU VALAT (SÜDFRANKREICH) BERINGTER TIERE. [DISTRIBUTION AND MIGRATION OF DUCKS IN THE COLD WINTERS OF 1956 AND 1962/63. A COMPARATIVE ANALYSIS OF BANDING RETURNS AT LA TOUR DE VALAT (SOUTHERN FRANCE).] *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 293-307, 6 figs. 1965. In German with French and English summ. *WR 139: 96*

István, Sterbetz. GAZDASAGI ES TERMESZETVEDELMI PROBLEMAK AHAZAI TOKESRECEK TAPLALKOZASABAN. [ECONOMIC AND NATURE-CONSERVATION PROBLEMS ON THE FEEDING HABITS OF THE HUNGARIAN MALLARD *(ANAS PLATYRHYNCHOS).*] *Aquila* 73/74: 133-140. 1966/1967. [From Biol. Abstr. 51(3), 1970. In Hungarian.] *WR 139: 96*

Jakimchuk, R. D. AN ANALYSIS OF AGRICULTURAL DAMAGE BY WATERFOWL IN ALBERTA. *Trans. 33rd Federal-Provincial Wildl. Conf. (Edmonton, Alberta) 8-10 July 1969.* p. 68-82, 2 figs. 1969. *WR 139: 96*
About 35% of Alberta farmers suffer damage in any one year of which approximately one in six claim compensation (which amounts to 35% of actual losses incurred). Waterfowl depredations are a function of length of harvest rather than start of harvest.--From summ.

Jessen, Robert L., Dwain W. Warner, Francis A. Spurrel, John P. Lindmeier, and Bertin W. Anderson. LEAD SHOT IN SOME SPRING MIGRANT DUCKS. *J. Minn. Acad. Sci.* 35(2/3): 90-94, illus. 1969. [From Biol. Abstr. 51(1), 1970.] *WR 139: 96*
[Minn. State Dept. Conserv., Brainerd.]

Johnsgard, P. A. SOME OBSERVATIONS ON MACCOA DUCK BEHAVIOR. *Ostrich* 39: 219-222. 1968. [From Auk 87(2), 1970.] *WR 139: 96*
"Oxyura maccoa."

Jones, Robert D., Jr. REPRODUCTIVE SUCCESS AND AGE DISTRIBUTION OF BLACK BRANT. *J. Wildl. Mgmt.* 34(2): 328-333. Apr. 1970. *WR 139: 96*
[Aleutian Islands Natl. Wildl. Refuge, Alaska.] Abstract: Black brant *(Branta bernicla orientalis)* have plumage characteristics that distinguish first-year birds from older ones. Reproductive success of the brant population was monitored on the Izembek National Wildlife Range, Alaska, during the autumns of 1963-1969. Age ratios were based on counts of about 10 percent of an estimated population of 200,000 brant. Percentage of juveniles in the population, based on 142,176 observations, ranged from 18-40 percent. Some adults apparently do not participate in breeding. In 1966, 1967, 1968, and 1969, the percentages of non-breeders were estimated to be 31, 69, 69, and 54 percent respectively. Data concerning family size have been gathered since 1965, and family groups range from 2.58-2.86 juveniles per family. These data confirm the low reproductive yield of the brant population suggested by earlier authors.

Krapu, Gary L., David R. Parsons, and Milton W. Weller. WATERFOWL IN RELATION TO LAND USE AND WATER LEVELS ON THE SPRING RUN AREA. *Iowa State J. Sci.* 44(4): 437-452, 3 figs. May 1970. *WR 139: 96*
[Iowa State Univ., Ames.] Abstract: Low water levels during critical phases of the breeding cycle appear to have caused population declines of waterfowl and other marsh birds on the Spring Run Game Management Area. Pair-counts indicated a decline from 70 pairs of waterfowl in 1965 to 2 pairs in 1968. Nest success of upland nesting blue-winged teal *(Anas discors)* averaged 33%, and mallards *(Anas platyrhynchos)* averaged 23%. Blue-winged teal selected nest sites closer to water than did mallards (314 feet versus 424 feet). Teal nested in ungrazed bluegrass *(Poa pratensis)* in preference to alfalfa *(Medicago sativa)* hayland. Bromegrass *(Bromus inermis)* was readily used by teal and mallards when it became

available for nesting. Nest success of species nesting overwater was considerably higher: redheads *(Aythya americana)* were 55% successful, and 93% of 75 coot *(Fulica americana)* nests hatched. A study of dummy-nests showed nest success significantly higher on ungrazed than on grazed bluegrass. Grazing did not significantly lower total mouse populations but did change species composition because deer mice *(Peromyscus maniculatus)* increased as other species declined with grazing.

Macdonald, R. THE AUSTRALIAN COOT ESTABLISHED ON VIRGINIA LAKE, WANGANUI. *Notornis* 15: 234-237. 1968. [From Auk 87(2), 1970.] *WR 139: 97*
"Fulica atra."

McKnight, Donald Edward. WATERFOWL PRODUCTION ON A SPRING-FED SALT MARSH IN UTAH. *Ph.D. thesis, Utah State Univ.* 145 p. 1969. [From Dissertation Abstr. 30(10B), 1970.] *WR 139: 97*
Waterfowl population and factors affecting waterfowl production were studied to see how to obtain greater waterfowl production on spring-fed marshes. Limitations of brood-rearing habitat were primarily responsible for low waterfowl production in the past. Newly-created impoundments, rich in proteinaceous foods for ducklings, were probably the key to the increase in production on the marsh studied.

Molodovskii, A. V. [THE NESTING OF ANATIDS AT THE GOR'KII RESERVOIR.] *Uch. Zap. Gor'k. Univ.* 90: 94-97. 1968. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1969, no. 8I380. Transl. of Russian abstr.] *WR 139: 97*

Nauman, Lyle Edward. ENDOCRINE RESPONSE TO DDT AND SOCIAL STRESS IN THE MALE MALLARD. *Ph.D. thesis, Ohio State Univ.* 142 p. 1969. [From Dissertation Abstr. 30(10B), 1970.] *WR 139: 97*
Neither peck order position nor the number of dominant or subordinate interactions per observation period were affected by DDT treatments. Social stress and crowding caused an increase in circulating levels of corticosterone, and as the number of subordinate interactions increased, the adrenal weight also increased.

Norderhaug, Magnar. NAVAERENDE BESTAND AV RINGGJESS *(BRANTA BERNICLA HROTA* (MULL.)) PA SVALBARD OG FRANS JOSEFS LAND. [PRESENT POPULATION SIZE OF THE LIGHT-BELLIED BRENT, *BRANTA BERNICLA HROTA*, IN SVALBARD AND FRANZ JOSEF LAND.] *Sterna* (Stavanger Mus.) 8(2): 73-80, illus. 1968. [From Biol. Abstr. 51(4), 1970. In Norwegian with English summ.] *WR 139: 97*

Oelke, Hans. DIE BRANDGANS *(TADORNA TADORNA)* IM MAUSERGEBIET GROSSER KNECHTSAND. [THE SHELDUCKS *(TADORNA TADORNA)* IN THE MOLTING AREA OF GROSSER KNECHTSAND.] *J. Ornithol.* 110(2): 170-175, illus. 1969. [From Biol. Abstr. 51(7), 1970. In German with English summ.] *WR 139: 97*

Olney, P. J. S. THE AUTUMN AND WINTER FEEDING BIOLOGY OF CERTAIN SYMPATRIC DUCKS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 309-321, [7] figs. 1965. In English with French and German summ. *WR 139: 97*
[Wildfowl Trust, Slimbridge, Gloucestershire, England.]

Owen, Ray B., Jr. THE BIOENERGETICS OF CAPTIVE BLUE-WINGED TEAL UNDER CONTROLLED AND OUTDOOR CONDITIONS. *Condor* 72(2): 153-163, 8 figs. Apr. 1970. *WR 139: 97*
[Univ. Maine, Orono.] Metabolism, temperature tolerance, weight change, existence energy, coefficient of utilization and caloric value of feces, and a modified method for determining existence energy are discussed.--Courtesy/ Paul A. Stewart.

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Parrish, John M., and Brian F. Hunter. WATERFOWL BOTULISM IN THE SOUTHERN SAN JOAQUIN VALLEY, 1967-68. *Calif. Fish & Game* 55(4): 265-272, 1 fig. 1969. *WR 139: 98*

[Calif. Dept. Fish & Game, Sacramento.] Abstract: A major outbreak of waterfowl botulism occurred in the Kern River Delta area of the San Joaquin Valley, southeastern Kings County, California, during the fall and winter of 1967-68. Approximately 60,000 waterfowl were lost. Some 6,360 sick ducks were treated and survived. The extensive cooperative control program of the U.S. Bureau of Sport Fisheries and Wildlife and the California Department of Fish and Game is described. An estimated 250,000 waterfowl were saved by this program. The outbreak was unusual in that it occurred later in the season than is customary, mid-October 1967 to March 1968.

Paul, Adrian. SURVIVAL OF WESTERN GREBE IN MINUS FIFTY DEGREE TEMPERATURE. *Murrelet* 50(3): 36. Sept.-Oct. 1969. *WR 139: 98*

[Kleena Kleene, British Columbia, Canada.] The grebe occupied a muskrat's sheltered breathing station.

Prince, Harold H., P. B. Siegel, and George W. Cornwell. INHERITANCE OF EGG PRODUCTION AND JUVENILE GROWTH IN MALLARDS. *Auk* 87(2): 342-352. Apr. 1970. *WR 139: 98*

[Mich. State Univ., East Lansing.] Semidomesticated game farm mallards *(Anas platyrhynchos)* had a longer breeding season, higher egg production, higher fertility, and higher body weight than mallards from eggs collected more recently from wild stock.--Courtesy/ Paul A. Stewart.

Robertson, Ian, and Henry Stelfox. SOME INTERSPECIFIC INTOLERANCE BETWEEN BARROW'S GOLDENEYE AND OTHER DUCK SPECIES DURING BROOD-REARING. *Canadian Field-Naturalist* 83(4): 407-408. Oct.-Dec. 1969. *WR 139: 98*

[Canadian Wildl. Serv., Vancouver, British Columbia, Canada.]

Schroeder, Charles H. TRENDS IN NORTH DAKOTA'S BREEDING DUCK POPULATION. *N. Dak. Outdoors* 33(1): 21-22. July 1970. *WR 139: 98*

An analysis of data from 1948 to 1970 showed an increase within the last 10 years of breeding duck populations and water areas available. Both the numbers of ducks and water areas were the highest in 1970, with breeding duck index being 124% above the 22 year average. The two factors tend to rise and fall together, indicating a correlation between the numbers of breeding ducks and the number of water areas present in mid-May.

Skaggs, M. B. ON BAND SIZES FOR GREBES. *Inland Bird Banding News* 42(1): 10, 1 fig. Jan.-Feb. 1970. *WR 139: 98*

[Dodd Road, Rt. 5, Willoughby, Ohio.] A size five band that is slightly flattened into an oval shape fits both the horned grebe and the pied-billed, while the recommended size 6 appears to be too large.--Courtesy/ Paul A. Stewart.

Smith, S. B. CRITIQUE OF WATERFOWL MANAGEMENT IN CANADA. *Trans. 33rd Federal-Provincial Wildl. Conf. (Edmonton, Alberta) 8-10 July 1969.* p. 51-58. 1969. *WR 139: 98*

Sugden, Lawson G., and Denis A. Benson. AN EVALUATION OF LOAFING RAFTS FOR ATTRACTING DUCKS. *J. Wildl. Mgmt.* 34(2): 340-343. Apr. 1970. *WR 139: 98*

[Canadian Wildl. Serv., Saskatoon, Saskatchewan, Canada.] Abstract: The addition of loafing rafts to five parkland and six grassland lakes in Alberta, as a means of increasing breeding ducks, was evaluated between 1960 and 1964 by comparing breeding pair densities before and after treatment on similar numbers of experimental and control lakes. Lakes ranged in area from 12-84 acres and had little or no emergent aquatic plant cover. Rafts, approximately 1.5 X 9 ft, were anchored 20 yards from shore at the rate of one raft/100 yards of shoreline. There was no significant *(P>0.05)* evidence that the addition of rafts affected duck use.

Wardell, John, and Jeffery Harrison. THE USE OF HAND REARED MALLARD TO AUGMENT A WILD POPULATION. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 285-291. 1965. In English with French and German summ. *WR 139: 99*
[Tadorne Rd., Tadworth, Surrey, England.]

SWANS & GEESE

Davies, Cliff, Helga Fischer, and Eberhard Gwinner. DIE BRUTZEITEN EINIGER GANSEARTEN UND IHRER BASTARDE IN IDENTISCHEN BEDINGUNGEN. [DIFFERENCES IN BREEDING TIMES BETWEEN CERTAIN SPECIES OF GEESE AND THEIR HYBRIDS UNDER IDENTICAL CONDITIONS.] *Oecologia* 3(2): 266-276, illus. 1969. [From Biol. Abstr. 51(4), 1970. In German with English summ.] *WR 139: 99*
[Univ. Wash., Seattle.]

István, Sterbetz. A MAGYARORSZAGON TELELO LILIKEK OKOLOGIAI PROBLEMAI. A LILIK ELOFORDULASA A JELEN SZAZADBAN. [ECOLOGICAL PROBLEMS OF WHITE-FRONTED GEESE WINTERING IN HUNGARY. PRESENCE OF WHITE-FRONTED GEESE IN THIS CENTURY.] *Aquila* 73/74: 33-49, illus. 1966/1967. [From Biol. Abstr. 51(3), 1970. In Hungarian.] *WR 139: 99*

Iygi, A. [THE PRESENT DISTRIBUTION OF THE MUTE SWAN IN THE ESTONIAN SSR.] *Soobshch. Pribalt. Komis. Izuch. Migratsii Ptits Akad. Nauk Est. SSR* 5: 68-75. 1968. [From Biol. Abstr. 51(9), 1970, from Referat. Zhur., Biol., 1969, no. 7I348. Transl. of Russian abstr.] *WR 139: 99*

Jarvis, Robert Leo. ECOLOGICAL AND PHYSIOLOGICAL ASPECTS OF SOYBEAN IMPACTION IN CANADA GEESE. *Ph.D. thesis, Southern Ill. Univ.* 118 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 99*
Impactions form only when large quantities of soybeans are ingested; only then is the pressure generated by the swelling soybeans exerted against the esophageal wall. Feeding patterns and behavior of geese may be conducive to ingestion of large quantities of food in early fall. Drinking was not essential to impaction formation since secretions from mucous glands provide sufficient water for maximum swelling of soybeans. Chronic impactions resulted when soybeans distended the fusiform crop region of the esophagus. The pressure exerted against the esophagus produced necrosis because of restriction of local blood flow, and the blocked esophagus resulted in starvation.

Jones, R. N., and M. Obbard. CANADA GOOSE KILLED BY ARCTIC LOON AND SUBSEQUENT PAIRING OF ITS MATE. *Auk* 87(2): 370-371. Apr. 1970. *WR 139: 99*
[Univ. Western Ontario, London, Ontario, Canada.] An arctic loon *(Gavia arctica)* killed a male Canada goose *(Branta canadensis)* seemingly by piercing the goose's lung and pulmonary vein with its bill. The surviving female goose had remated by the following day.--Courtesy/ Paul A. Stewart.

Kear, Janet. THE ASSESSMENT OF GOOSE DAMAGE BY GRAZING TRIALS. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 333-339. 1965. In English with French and German summ. *WR 139: 99*
[Wildfowl Trust, Slimbridge, Gloucestershire, England.]

Lieff, Bernard C., Charles D. MacInnes, Raj K. Misra. FOOD SELECTION EXPERIMENTS WITH YOUNG GEESE. *J. Wildl. Mgmt.* 34(2): 321-327. Apr. 1970. *WR 139: 99*
[Univ. Western Ontario, London, Ontario, Canada.] Abstract: Young Canada geese *(Branta canadensis)* and the blue geese *(Chen caerulescens)* were tested experimentally for food preferences among six species of grasses and sedges. Fifty-cm^2 sods of two plant species were presented to two goslings in a test enclosure. The time intervals that individual birds spent feeding on each sod during a 90-minute test were recorded. Two pairs of goslings of each species were tested against all pair combination of the six plants. Each species show

significant preference for some plants over others, and the preferences of the two species were demonstrably different. Faults in experimental design are discussed, and it is shown that results cannot be extended directly to free-ranging wild geese.

Lund, Hj. Munthe-Kass. MARKING OF 240 GREY LAGS *(ANSER A. ANSER* L.) IN NORWAY. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 267-270, 1 fig. 1965. In English. *WR 139: 100*
[Norwegian State Game Res., Vollebekk, Norway.]

Newton, I., and C. R. G. Campbell. GOOSE STUDIES AT LOCH LEVEN IN 1967/68. *Scottish Birds* 6(1): 5-18, 2 figs. Spring 1970. *WR 139: 100*
[Nature Conservancy, 12 Hope Terrace, Edinburgh, Scotland.] The pinkfeet and grey lag geese ate almost every type of crop available in the study area, though neither selected food in proportion to its availability. Grass was eaten by both throughout their stay; spilled grain mainly in autumn; potatoes mainly in autumn, winter and early spring; and growing corn mainly in late spring. The species differed in the proportions of these various foods they ate. The greylag has a larger bill and ate more root crops, turnips forming its main food in times of snow. The chief conflicts with agriculture arose when greylag ate turnips in winter, and when both species ate young grass in spring.--From summ.

Nulle, Curtis William. THE GIANT CANADA GOOSE IN SOUTH DAKOTA. *Modern Game Breeding* 6(8): 13-14, 27, 3 figs. June 1970. *WR 139: 100*
[Erickson Court, Sisseton, S. Dak.] Presents management techniques for captive breeding of giant Canada geese. Endeavors of landowner cooperator projects are reported.

Ryder, John P. A POSSIBLE FACTOR IN THE EVOLUTION OF CLUTCH SIZE IN ROSS' GOOSE. *Wilson Bull.* 82(1): 4-13, 5 [figs.]. Mar. 1970. *WR 139: 100*
[Manitoba Dept. Mines & Nat. Resources, Wildl. Branch, Winnipeg, Manitoba, Canada.] Suggests that the clutch size of Ross' goose *(Chen rossii)* has evolved in relation to the food reserves which the female accumulates before arrival on the breeding grounds.--Courtesy/ Paul A. Stewart.

Sterbetz, István, and Josef Szijj. DAS ZUGVERHALTEN DER ROTHALSGANS *(BRANTA RUFICOLLIS)* IN EUROPA. [THE MIGRATIONAL BEHAVIOR OF THE RED-BREASTED GOOSE *(BRANTA RUFICOLLIS)* IN EUROPE.] *Vogelwarte* 24(3/4): 266-277, illus. 1968. [From Biol. Abstr. 51(9), 1970. In German with English summ.] *WR 139: 100*

Troostwijk, W. J. Doude van. THE EUROPEAN WHITE-FRONTED GOOSE *(ANSER A. ALBIFRONS)* DURING THE WINTER 1962/63. *Trans. 6th Congr. Intern. Union Game Biol. Bournemouth 7-12 Oct. 1963.* p. 275-284, 2 figs. 1965. In English with French and German summ. *WR 139: 100*
[ITBON, Arnhem, Netherlands.]

CRANES, RAILS, SHOREBIRDS

Andersen-Harild, Pelle. NOGLE RESULTATER OF RINGMAERKNINGEN AF TEJST *(CEPPHUS GRYLLE)* I DANMARK. [SOME RESULTS OF RINGING OF BLACK GUILLEMOT *(CEPPHUS GRYLLE)* IN DENMARK.] *Dansk Ornithol. Foren. Tidsskr.* 63(2): 105-110. 1969. [From Biol. Abstr. 51(9), 1970. In Danish with English summ.] *WR 139: 100*
[Zool. Mus., Copenhagen, Denmark.]

Barth, Edvard K. THE CIRCUMPOLAR SYSTEMATICS OF *LARUS ARGENTATUS* AND *LARUS FUSCUS* WITH SPECIAL REFERENCE TO THE NORWEGIAN POPULATIONS. *Nytt Mag. Zool.* (Oslo) 15(suppl. 1): 1-50, illus. 1968. [From Biol. Abstr. 51(11), 1970.] *WR 139: 100*
[Univ. Oslo, Oslo, Norway.]

Bauer, Willy, and Herbert Siegel. NACHTREIHER--*NYCTICORAX NYCTICORAX*--BRUTVOGEL AM OBERRHEIN. [NIGHT HERON--*NYCTICORAX NYCTICORAX*--BREEDING BIRD OF THE UPPER RHINE.] *Luscinia* 40(6): 215-218. Dec. 1969. In German. *WR 139: 101*
[Schneckenhofstrasse 35, Frankfurt/M., Germany.]

Becker, Hans. WEITERE VERSUCHE UEBER RICHTUNGSTENDENZEN VON LACHMOEWEN *(LARUS RIDIBUNDUS* L.*)* UND TAUBEN NACH VERFRACHTUNG. [FURTHER EXPERIMENTS CONCERNING THE ORIENTATION BEHAVIOR OF *LARUS RIDIBUNDUS* L. AND OF PIGEONS FOLLOWING REMOVAL TO DISTANT PLACES.] *Z. Wiss. Zool.* 178(1/2): 186-234, illus. 1968. [From Biol. Abstr. 51(5), 1970. In German.] *WR 139: 101*
[Univ. Kiel, Kiel, Germany.]

Bezzel, Einhard. EINIGE GRUNDSAETZLICHE BEMERKUNGEN ZUM VORKOMMEN SELTENER LIMIKOLEN IM BINNENLAND. [SOME FUNDAMENTAL OBSERVATIONS ON THE APPEARANCE OF RARE CURLEWS IN THE INLAND AREAS.] *Vogelwarte* 24(3/4): 212-213. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 101*

Cooper, K. H., and K. Z. Edwards. A SURVEY OF BALD IBIS IN NATAL. *Bokmakierie* 21: 4-9. 1969. [From Auk 87(2), 1970.] *WR 139: 101*
"Geronticus calvus."

Crankshaw, William B., Jerry A. Smith, and Ralph D. Kirkpatrick. WOODCOCK SINGING GROUND DESCRIPTIONS FOR TWO INDIANA SITES. *Proc. Ind. Acad. Sci.* 78: 241-244. 1968. *WR 139: 101*
[Ball State Univ., Muncie, Ind.] The two sites are described on the basis of vegetation, soils, drainage, land use, and the more common fauna. Both are in cultivated fields.

Creutz, Gerhard. DAS VORKOMMEN DER REIHER IN DER OBERLAUSITZ. [THE OCCURRENCE OF HERONS IN OBERLAUSITZ (GERMANY).] *Abh. Ber. Naturkundemus Goerlitz* 43(4): 1-29. 1968. [From Biol. Abstr. 51(7), 1970. In German.] *WR 139: 101*
[Deutsch Akad. Landwirtschaftswiss., Berlin, Germany.]

Creutz, Gerhardt, and Cord Gottschalk. ENDOPARASITENBEFALL BEI LACHMOEWEN IN ABHANGIGKEIT VOM ALTER. [ENDOPARASITE INFECTION OF BLACK HEADED GULLS DEPENDENT ON AGE.] *Angew. Parasitol.* 10(2): 80-90, illus. 1969. [From Biol. Abstr. 51(7), 1970. In German with English and Russian summ.] *WR 139: 101*
[Vogelschutzwarte Neschwitz Biol. Zentralanst., Neschwitz, Germany.]

Davant, Pierre, Alain Fleury, and Pierre Petit. LA NIDIFICATION DU COURLIS CENDRE, *NUMENIUS ARQUATA* (L.) A L'OUEST DE BORDEAUX. [NEST AREAS OF THE CURLEW, *NUMENIUS ARQUATA* (L.), WEST OF BORDEAUX.] *Alauda* 36(4): 279-283. 1968. [From Biol. Abstr. 51(5), 1970. In French.] *WR 139: 101*
[Univ. Bordeaux, Bordeaux, France.]

Erz, Wolfgang. METHODEN ZUR ERLANGUNG VON BRUT- UND NAHRUNGSÖKOLIGISCHEN DATEN AUS EINER GRAUREIHER-KOLONIE. [METHODS OF OBTAINING COLLECTING DATA ON THE BREEDING AND FOOD ECOLOGY OF A HERONRY COLONY.] *Vogelwelt* 89(5): 175-178. 1968. [From Biol. Abstr. 51(11), 1970. In German with English summ.] *WR 139: 101*
[Asidusstrasse 94, Essen, Germany.]

Ferdinand, Lorenz. SOME OBSERVATIONS ON THE BEHAVIOUR OF THE LITTLE AUK *(PLAUTUS ALLE)* ON THE BREEDING-GROUND, WITH SPECIAL REFERENCE TO VOICE PRODUCTION. *Dansk Ornithol. Foren. Tidsskr.* 63(1): 19-44, illus. 1969. [From Biol. Abstr. 51(9), 1970. In English with Danish summ.] *WR 139: 101*
[Natur. Hist. Mus., Arhus, Denmark.]

Fiedler, Wilhelm, and Georg Fiedler. WEISSSTORCHZENSUS 1968 IN HESSEN. [WHITE STORK CENSUS 1968 IN HESSEN.] *Luscinia* 40(6): 219-229. Dec. 1969. In German. *WR 139: 101*
[Berliner Strasse 15, Bad Homberg, Germany.]

Focke, Eberhard. ZUM VERHALTEN JUNGER SILBERMOWEN *(LARUS ARGENTATUS)* BEI BEDROHUNG DURCH ADULTE ARTGENOSSEN. [ON THE BEHAVIOR OF YOUNG HERRING GULLS *(LARUS ARGENTATUS)* WITH THREATS FROM ADULTS OF THE SAME SPECIES.] *Vogelwarte* 24(3/4): 262-266. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 102*
[Vogelwarte Helgoland, Wilhelmshaven, Germany.]

Forsythe, Dennis N. VOCALIZATIONS OF THE LONG-BILLED CURLEW. *Condor* 72 (2): 213-224, 5 figs. Apr. 1970. *WR 139: 102*
[The Citadel, Charleston, S.C.] Presents spectrographic analyses of calls of adults and chicks of *Numenius americanus*, and relates the calls to behavior.--Courtesy/ Paul A. Stewart.

Freitag, Fritz. ÜBER POLYGYNIE BEIM KIEBITZ--*VANELLUS VANELLUS*. [ON POLYGYNY IN THE LAPWING *(VANELLUS VANELLUS)*.] *Luscinia* 40(6): 253-255. Dec. 1969. In German. *WR 139: 102*
[Siechhofstrasse 4, Wetzlar, Germany.]

Harengerd, Michael, and Werner Prunte. EINIGE BEMERKUNGEN ZU: "METHODEN UND ALLGEMEINE ERGEBNISSE DER LIMIKOLENZAEHLUNG IN WESTFALEN". [SOME OBSERVATIONS ON: "METHODS AND GENERAL RESULTS OF THE CURLEW COUNT IN WESTPHALIA".] *Vogelwarte* 24(3/4): 243-246. 1968. [From Biol. Abstr. 51(9), 1970. In German.] *WR 139: 102*

Harris, M. P. THE BIOLOGY OF STORM PETRELS IN THE GALAPAGOS ISLANDS. *Proc. Calif. Acad. Sci.* 37(4): 95-166, illus. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 102*
[Univ. Oxford, Oxford, England.]

Harris, Michael P. BREEDING ECOLOGY OF THE SWALLOW-TAILED GULL, *CREAGRUS FURCATUS*. *Auk* 87(2): 215-243, 8 figs. Apr. 1970. *WR 139: 102*
[Univ. Oxford, Oxford, England.] The following topics are discussed: morphology, feeding, selective advantages of nocturnal habits, the breeding cycle, breeding synchrony, pre-egg stage, egg stage, chick stage, molt, nesting success, population dynamics, significance of the single-egg clutch, and adaptations to cliff nesting.--Courtesy/ Paul A. Stewart.

Hatch, Jeremy J. PREDATION AND PIRACY BY GULLS AT A TERNERY IN MAINE. *Auk* 87(2): 244-254, 1 fig. Apr. 1970. *WR 139: 102*
[Rockefeller Univ., New York, N.Y.] Herring gulls *(Larus argentatus)* and great black-backed gulls *(L. marinus)* ate living chicks of arctic and common terns *(Sterna paradisaea* and *S. hirundo)*, with the annual toll being as high as 1.2 chicks per pair of terns. Laughing gulls *(L. atricilla)* robbed the terns of fish, and the stolen fish formed a large part of these gulls' food.--Courtesy/ Paul A. Stewart.

Haverschmidt, F. RUDDY TURNSTONES MAKING USE OF YELLOW-CROWNED NIGHT HERONS FOR FOOD-FINDING. *Wilson Bull.* 82(1): 99. Mar. 1970. *WR 139: 102*
[Wolfskuilstraat 16, Ommen, Holland.] Ruddy turnstones *(Arenaria interpres)* fed on food fragments dropped by yellow-crowned night herons *(Nyctanassa violacea)*.--Courtesy/ Paul A. Stewart.

Hays, Helen. COMMON TERNS PIRATING FISH ON GREAT GULL ISLAND. *Wilson Bull.* 82(1): 99-100. Mar. 1970. *WR 139: 102*
[14 E. 95th St., New York, N.Y.] Adult terns pirated fish brought in to feed the young.--Courtesy/ Paul A. Stewart.

Hays, Helen, and Grace Donaldson. SAND-KICKING CAMOUFLAGES YOUNG BLACK SKIMMERS. *Wilson Bull.* 82(1): 100. Mar. 1970. *WR 139: 102*
[14 E. 95th St., New York, N.Y.] The sand-kicking functions in digging a depression in which the bird lies, at the same time partially covering the young skimmer with sand and helping to camouflage it.--Courtesy/ Paul A. Stewart.

Heckenroth, Hartmut. BEOBACHTUNGEN ÜBER DIE RECHTSWENDUNG DES WEGZIEHENDEN WEISSSTORCHS AM GOLF VON ISKENDERUN. [OBSERVATIONS ON THE TURNING TO THE RIGHT IN THE MIGRATION OF THE WHITE STORK AT THE GULF OF ISKENDERUN.] *Vogelwarte* 24 (3/4): 246-262, illus. 1968. [From Biol. Abstr. 51(9), 1970. In German with English summ.] *WR 139: 103*
[Vogelwarte, Radolfzell, Germany.] *"Ciconia ciconia."*

Heckenroth, H. DER WEISSSTORCH-BESTAND VON NORDWEST-GRIECHENLAND 1968. [THE WHITE STORK POPULATION IN NORTHWESTERN GREECE IN 1968.] *Vogelwarte* 25(1): 18-23. 1969. [From Biol. Abstr. 51(13), 1970. In German with English summ.] *WR 139: 103*

Heckenroth, Hartmut. DER WEISSSTORCH-BESTAND 1965 IM WESTLICHEN MITTELEUROPA. [THE WHITE STORK OCCURRENCE IN WESTERN CENTRAL EUROPE IN 1965.] *Vogelwarte* 25 (1): 27-46. 1969. [From Biol. Abstr. 51(13), 1970. In German.] *WR 139: 103*

Hepp, K. GRAUREIHERKOLONIE ZWINGENBERG/NECKAR. [GRAY HERON COLONY AT ZWINGENBERG/NECKAR.] *Ornithol. Mitteil.* 22(5): 98-100. May 1970. In German. *WR 139: 103*
[Lindenstrasse 18, Pforzheim, Germany.]

Horak, Gerald J. A COMPARATIVE STUDY OF THE FOODS OF THE SORA AND VIRGINIA RAIL. *Wilson Bull.* 82(2): 206-213. June 1970. *WR 139: 103*
[Kans. Forestry, Fish & Game Comm., Cottonwood Falls.] Contains tables of food items of 19 soras *(Porzana carolina)* and 37 virginia rails *(Rallus limicola).*--Courtesy/ Paul A. Stewart.

Keil, Werner, and Rudolf Rossbach. BESTANDSVERÄNDERUNGEN DES WEISSSTORCHS--*CICONIA CICONIA*--IN HESSEN VON 1948 BIS 1968. [CHANGES IN STATUS OF WHITE STORKS *(CICONIA CICONIA)* IN HESSEN FROM 1948 TO 1968.] *Luscinia* 40(6): 230-249. Dec. 1969. In German with English summ. *WR 139: 103*
[Vogelschutzwarte, Frankfurt/M.-Fechenheim, Germany.] A catastrophic decline--86% of the breeding pairs, and a 90% loss of breeding pairs with successful broods during the period 1948-1968.

Keve, András, and István Sterbetz. ZUGVERSCHIEBUNG BEIM GROSSEN BRACHVOGEL *(NUMENIUS ARQUATA)* IN UNGARN. [MIGRATIONAL DISPLACEMENT OF THE CURLEW *(NUMENIUS ARQUATA)* IN HUNGARY.] *Vogelwarte* 24(3/4): 198-200. 1968. [From Biol. Abstr. 51(9), 1970. In German with English summ.] *WR 139: 103*

Klemm, Werner. DER WEISSSTORCH-BESTAND IM GEBIET VON SIBIU (HERMANNSTADT) IN SIEBEN-BUERGEN 1963 UND 1967. [THE WHITE STORK OCCURRENCE IN THE NEIGHBORHOOD OF SIBIU (HERMANNSTADT) IN THE SIEBEN BERGE MOUNTAINS IN 1963 AND 1967 (ROMANIA).] *Vogelwarte* 25(1): 25-26. 1969. [From Biol. Abstr. 51(13), 1970. In German.] *WR 139: 103*

Kocwa, Elzbieta, and Jerzy Szewczyk. MEWY, ICH BIOLOGIA I ROLA HIGIENICZNO-SANITARNA. [SEA GULLS, THEIR BIOLOGY AND ROLE IN HYGIENE.] *Wszechswiat* 3: 72-74, illus. 1969. [From Biol. Abstr. 51(7), 1970. In Polish.] *WR 139: 103*
[Polish Copernicus Soc. Nat., Warsaw, Poland.]

Kroymann, Burkhard. METHODE UND ERGEBNISSE EINER BESTANDSAUFNAHME BEIM KIEBITZ *(VANELLUS VANELLUS)* ZWISCHEN SCHWARZWALD UND SCHWAEBISCHER ALB. [METHOD AND RESULTS OF A POPULATION SURVEY OF THE LAPWING *(VANELLUS VANELLUS)* BETWEEN THE BLACK FOREST AND THE SUABIAN ALB.] *Vogelwelt* 90(1): 8-16. 1969. [From Biol. Abstr. 51(4), 1970. In German with English summ.] *WR 139: 103*

Krzywinski, Andrzej. OBSERWACJE NAD BIOLOGIA KURECZKI ZIELONKI, *PORZANA PARVA* (SCOP.). [OBSERVATIONS ON BIOLOGY OF LITTLE CRAKE *PORZANA PARVA* (SCOP.).] *Notatki Ornitol.* 8(2/3): 51-53. 1967. [From Biol. Abstr. 51(12), 1970. In Polish with English summ.] *WR 139: 103*
[Szk. Gl. Gosp. Weijsk., Szeroki Bor, Poland.]

Kumerloeve, Hans. DIE SILBERMOEWE, *LARUS ARGENTATUS*, ALS BINNENLAND-BRUTVOGEL IM OESTLICHEN KLEINASIEN. [THE HERRING GULL, *LARUS ARGENTATUS*, AS INLAND HATCHING BIRD IN EASTERN ASIA MINOR.] *Vogelwarte* 25(1): 47-49. 1969. [From Biol. Abstr. 51(13), 1970. In German.] *WR 139: 104*

Lambert, K. SCHWALBENMÖWEN *(XEMA SABINI)* IM APRIL UND MAI 1968 VOR SÜDWEST- UND SÜDAFRIKA. [SABINE'S GULL *(XEMA SABINI)* IN APRIL AND MAY 1968 OFFSHORE SOUTHWEST AND SOUTH AFRICA.] *Vogelwarte* 25(1): 49-52. 1969. [From Biol. Abstr. 51(13), 1970. In German with English summ.] *WR 139: 104*

Manikowski, Stanisław. FLOCKS OF GULLS ON THE POLISH BALTIC COAST. *Ekologia Polska--Ser. A* 17(26): 433-445. 1969. In English with Polish summ. *WR 139: 104*
Four types of flocks are recognized: sleeping and resting flocks on land, sleeping and resting flocks at sea, feeding flocks on land, and feeding flocks at sea.

Marshall, William H. WOODCOCK SEX AND AGE RATIOS AND WEIGHTS IN MINNESOTA. *Loon* 42(1): 31-33. Mar. 1970. *WR 139: 104*
[Univ. Minn., St. Paul.] Data on weight, sex and age ratios of American woodcock were collected for the years 1953, 1954, 1955, 1958, 1959 and evaluated for differential migration movement according to sex.

McKenzie, H. R. CENSUS RECORDS OF TURNSTONE FOR FIRTH OF THAMES AND MANUKAU HARBOUR. *Notornis* 15: 238-241. 1968. [From Auk 87(2), 1970.] *WR 139: 104*
"Arenaria interpres."

Neub, Martin. WINTERNAHRUNG UND KOMMENSALISMUS DER LACHMÖWE *(LARUS RIDIBUNDUS)*. [WINTER FEEDING COMMENSALISM IN THE BLACK-HEADED GULL *(LARUS RIDIBUNDUS)*.] *Ornithol. Mitteil.* 22(2): 31-35. Feb. 1970. In German. *WR 139: 104*
[Olnhauser Strasse 10, Stuttgart, Germany.]

Rittinghaus, Hans. EIN BEITRAG ZUR OEKOLOGIE UND ZUM VERHALTEN DES GOLDREGENPFEIFERS, *PLUVIALIS APRICARIUS*, ZU BEGINN DER BRUTZEIT. [A CONTRIBUTION TO THE ECOLOGY AND BEHAVIOR OF THE GOLDEN PLOVER, *PLUVIALIS APRICARIUS*, AT THE BEGINNING OF BREEDING TIME.] *Vogelwarte* 25(1): 57-65, illus. 1969. [From Biol. Abstr. 51(13), 1970. In German.] *WR 139: 104*
[Inst. Vogelforsch., Wilhelmshaven, Germany.]

Ruppell, Georg. BEITRAEGE ZUM VERHALTEN DES KRABBENTAUCHERS *(PLAUTUS ALLE ALLE)*. [CONTRIBUTION TO THE BEHAVIOR OF THE LITTLE AUK *(PLAUTUS ALLE ALLE)*.] *J. Ornithol.* 110(2): 161-169, illus. 1969. [From Biol. Abstr. 51(11), 1970. In German with English summ.] *WR 139: 104*

Scharf, William C. GULL POINT, SOUTH MANITOU ISLAND--1966-1969. *Inland Bird Banding News* 42(1): 6-9, 1 fig. Jan.-Feb. 1970. *WR 139: 104*
[Northwestern Mich. Coll., Traverse City.] Population trends of the two species of gulls, *Larus argentatus* and *L. delawarensis*, breeding on the island are discussed with speculation on causes of the seemingly high juvenile ring-billed gull mortality of 1969.--From summ. Courtesy/ Paul A. Stewart.

Schreiber, Ralph W. BREEDING BIOLOGY OF WESTERN GULLS *(LARUS OCCIDENTALIS)* ON SAN NICOLAS ISLAND, CALIFORNIA, 1968. *Condor* 72(2): 133-140, 2 figs. Apr. 1970. *WR 139: 104*
[Smithsonian Inst., Washington, D.C.] The following are discussed: colony size, nesting season, nest description, egg coloration, clutch size, egg measurements, incubation period, hatching success, gull breeding in relation to California sea lion pupping, development of chicks, determination of incubation state by flotation and age structure of population.--Courtesy/ Paul A. Stewart.

Sibson, R. B. GIANT PETRELS AS MIGRANTS TO NORTHERN NEW ZEALAND. *Notornis* 16(1): 45-50. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 104*
"Macronectes giganteus."

Smith, K. D. THE WALDRAPP *GERONTICUS EREMITA* (L.). *Bull. British Ornithol. Club* 90(1): 18-24. Feb. 1970. *WR 139: 105*
Breeding, migratory, and winter ranges of the bald ibis, or waldrapp, are not well documented.

Smith, Susan M. "FOOT-TREMBLING" FEEDING BEHAVIOR BY A KILLDEER. *Condor* 72 (2): 245. Apr. 1970. *WR 139: 105*
[Univ. Wash., Seattle.] A killdeer *(Charadrius vociferus)* rapidly vibrated one foot as it stood on the other in shallow water. Periods of foot vibration were followed by pauses when the bird appeared to be feeding on the insects brought into movement by the foot-trembling.--Courtesy/ Paul A. Stewart.

Snoddy, Edward L. ON THE BEHAVIOR AND FOOD HABITS OF THE CATTLE EGRET, *BUBULCUS IBIS* (L.). *J. Ga. Entomol. Soc.* 4(4): 156-158. 1969. [From Biol. Abstr. 51(4), 1970.] *WR 139: 105*
[Univ. Ga., Experiment.]

Soikkeli, Martti. DISPERSAL OF DUNLIN *CALIDRIS ALPINA* IN RELATION TO SITES OF BIRTH AND BREEDING. *Ornis Fennica* 47(1): 1-9, 2 figs. 1970. In English with Finnish summ. *WR 139: 105*
[Univ. Turku, Turku, Finland.] Of a dunlin population banded as young none were found to settle farther than 5.0 km from their birth place; a quarter settled within 0.5 km and a half within 2.0 km. Site-tenacity is fundamental for mate-faithfulness, as mates meet and paw after spring arrival in the old territory. All mate-faithful birds settled within 0.3 km of their previous nest-sites.--From summ.

Soper, M. F. KERMADEC ISLANDS EXPEDITION REPORTS: THE GREY TERNLET *(PROCEISTERNA CERULEA ALBIVITTA)*. *Notornis* 16(2): 75-80, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 105*

Soper, M. F. KERMADEC ISLANDS EXPEDITION REPORTS: THE WHITE-CAPPED NODDY *(ANOUS TENUIROSTRIS MINUTUS)*. *Notornis* 16(2): 71-75, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 105*

Southern, William E. EN ROUTE BEHAVIOR OF HOMING HERRING GULLS AS DETERMINED BY RADIO-TRACKING. *Wilson Bull.* 82(2): 189-200, 1 fig. June 1970. *WR 139: 105*
[N. Ill. Univ., DeKalb.] Three factors contributed to slow homing rates: flights in wrong directions, time spent in other activity than flight, and failure to enter the home colony on return. These herring gulls *(Larus argentatus)* followed landmarks to some extent.--Courtesy/ Paul A. Stewart.

Tolonen, Karl Eric. RING-BILLED GULL AND LAUGHING GULL CATCH FISH BY "PLOUGHING" AND "SKIMMING." *Wilson Bull.* 82(2): 222-223. June 1970. *WR 139: 105*
[Yale Univ., New Haven, Conn.] *"Larus delawarensis* and *L. atricilla."*--Courtesy/ Paul A. Stewart.

Tschanz, B., H. Eymann, P. Ingold, M. Impekoven, H. Lengacher, H. J. Lengacher, A. Oberholzer, L. Schmekel, C. Singeisen, and H. Steiger. FAMILIELIV HOS LOMVI, *URIA AALGE*. [THE FAMILY LIFE OF *URIA AALGE*.] *Fauna* (Oslo) 22(1): 1-14, illus. 1969. [From Biol. Abstr. 51(9), 1970. In Norwegian.] *WR 139: 105*
[Univ. Bern, Bern, Switzerland.]

Uhler, Francis M., and Louis N. Locke. A NOTE ON THE STOMACH CONTENTS OF TWO WHOOPING CRANES. *Condor* 72(2): 246. Apr. 1970. *WR 139: 105*
[Patuxent Wildl. Res. Center, Laurel, Md.] *"Grus americana."*--Courtesy/ Paul A. Stewart.

CRANES, RAILS, SHOREBIRDS--Continued

van Tets, G. F. DIURNAL MOVEMENT PATTERNS OF THE SILVER GULL, *LARUS NOVAE-HOLLANDIAE* STEPHENS, AT SYDNEY AIRPORT. *CSIRO Wildl. Res.* 14(2): 111-116, 2 figs. Dec. 1969. *WR 139: 106*
[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: The diurnal movement patterns of silver gulls, *Larus novaehollandiae*, were found to be related to localized sources of food and shelter. Peak movements occurred at dawn and dusk when the gulls flew between roosting and feeding areas. Peak movements also occurred before and after low tide when gulls flew to and from the beach where they fed on intertidal animals. The gull showed a marked tendency to fly over water rather than over land. Changes in the availability and location of food and shelter were followed by corresponding changes in the movement patterns.

Van Velzen, Willet T. THE STATUS AND DISPERSAL OF VIRGINIA ROYAL TERNS. *Raven* 39(4): 55-60, 2 figs. Dec. 1968. *WR 139: 106*
[Migratory Bird Populations Sta., Laurel, Md.] Apparently a large percentage of birds less than one year old winter in Florida and the Caribbean. Banding returns during May and June for this age group are from Colombia and the Canal Zone, indicating that they do not breed the first year.

Voet, H. OVER HET VOORKOMEN IN JUNI VAN ENKELE DOORTREKKENDE WAADVOGELSOORTEN (SCOLOPACIDAE) IN BELGIE. [ON THE OCCURRENCE IN BELGIUM IN JUNE OF SOME MIGRANT WADING BIRDS (SCOLOPACIDAE).] *Gerfaut* 58(1/2): 114-138. 1968. [From Biol. Abstr. 51(11), 1970. In Dutch with French summ.] *WR 139: 106*
[Kapelse Steenweg 323, Ekeren, Belgium.]

HAWKS & OWLS

Beecham, John J. NESTING ECOLOGY OF THE GOLDEN EAGLE IN SOUTHWESTERN IDAHO. *M.S. thesis, Univ. Idaho.* 48 p. 1970. *WR 139: 106*

Boeker, Erwin L. USE OF AIRCRAFT TO DETERMINE GOLDEN EAGLE, *AQUILA CHRYSAETOS*, NESTING ACTIVITY. *Southwestern Nat.* 15(1): 136-137. 1 June 1970. *WR 139: 106*
[Denver Wildl. Res. Center, Tempe, Ariz.] Aircraft were used to check widely distributed nests for productivity data to conserve ground checking time. If nests were inaccessable to the aircraft or nest contents were unable to be determined after 2 passes, they were marked for later ground check. Ground checks revealed no signs of disturbance from the aerial survey; no evidence of desertion or eaglet loss which could be attributed to the check was later revealed.

Bryant, Eldon J. AN INTERESTING GREAT HORNED OWL OBSERVATION. *Iowa Bird Life* 50(1): 22. Mar. 1970. *WR 139: 106*
[R.R. 1, Akron, Iowa.] The owl, too young to fly, was twice flushed from its perch to land with a thud on the ground. A short time later it would be back in the tree. The third time, the owl was observed to walk over to the tree and climb it like a woodpecker.

Cooper, J. E. OESOPHAGEAL CAPILLARIASIS IN CAPTIVE FALCONS. *Vet. Rec.* 84 (25): 634-636, illus. 1969. [From Biol. Abstr. 51(3), 1970.] *WR 139: 106*
[Inst. Res. Anim. Dis., Berkshire, England.]

Doucet, J. EN MARGE DES OPERATIONS DE BAGUEMENT DES RAPACES AU NID: QUELQUES OBSERVATIONS CONCERNANT LA BONDREEAPIVORE, *PERNIS APIVORUS*, EN 1966 ET 1967. [FOOTNOTE ON THE BANDING OF BIRDS OF PREY AT THE NEST: SOME OBSERVATIONS ON THE HONEY BUZZARD, *PERNIS APIVORUS*, IN 1966 AND 1967.] *Gerfaut* 58(1/2): 94-100, illus. 1968. [From Biol. Abstr. 51(11), 1970. In French.] *WR 139: 106*
[Grand'Rue 113, Clermont, France.]

Festetics, A. ZWEIPHASENAKTIVITÄT BEI SCHLEIEREULE *(TYTO ALBA)*. [TWO PHASES OF ACTIVITY IN THE BARN OWL *(TYTO ALBA)*.] *Z. Tierpsychol.* 25: 659-665. 1968. [From Auk 87(2), 1970. In German.] *WR 139: 107*

Fiuczynski, D., and V. Wendland. ZUR POPULATIONSDYNAMIK DES SCHWARZEN MILANS *(MILVUS MIGRANS)* IN BERLIN BEOBACHTUNGEN 1952-1967. [THE POPULATION DYNAMICS OF THE BLACK KITE *MILVUS MIGRANS* IN BERLIN. OBSERVATIONS 1952-1967.] *J. Ornithol.* 109: 462-471. 1968. [From Auk 87(2), 1970. In German with English summ.] *WR 139: 107*

Glading, Ben, and Charlotte H. Glading. AN INSTANCE OF A CAPTIVE TURKEY VULTURE KILLING PREY. *Condor* 72(2): 244-245, 2 figs. Apr. 1970. *WR 139: 107*
[Calif. Dept. Fish & Game, P.O. Box 19176, Sacramento.] A caged turkey vulture *(Cathartes aura)* killed and ate a curve-billed thrasher *(Toxostoma curvirostre)* confined in the same cage. The thrasher was "lying exhausted" following combat with another of its own species when first attacked by the vulture.--Courtesy/ Paul A. Stewart.

Hartwig, Eike, and Gottfried Vauk. ZUG, RAST UND NAHRUNG DER AUF HELGOLAND DURCHZIEHENDEN WALDOHREULEN *(ASIO OTUS)*. [MIGRATION, RESTING AND FOOD ON THE TRAVEL ACROSS HELIGOLAND OF THE OWLS *(ASIO OTUS)*.] *Vogelwarte* 25(1): 13-18. 1969. [From Biol. Abstr. 51(13), 1970. In German.] *WR 139: 107*
[Inst. Vogelforsch., Wilhelmshaven, Germany.]

Haverschmidt, F. BARN OWLS HUNTING BY DAYLIGHT IN SURINAM. *Wilson Bull.* 82 (1): 101. Mar. 1970. *WR 139: 107*
[Wolfskuilstraat 16, Ommen, Holland.] *"Tyto alba hellmayri."*--Courtesy/ Paul A. Stewart.

Heim de Balsac, H. PRECISIONS SUR LA DISTRIBUTION DES RAPACES EN LORRAINE. [DETAILS ON THE DISTRIBUTION OF BIRDS OF PREY IN LORRAIN (FRANCE).] *Alauda* 36 (3): 157-162. 1968. [From Biol. Abstr. 51(5), 1970. In French.] *WR 139: 107*
The honey-buzzard, kite, goshawk, sparrow hawk, and buzzard are among the birds discussed.

Jenkins, Robert E. FOOD HABITS OF WINTERING SPARROW HAWKS IN COSTA RICA. *Wilson Bull.* 82(1): 97-98. Mar. 1970. *WR 139: 107*
[Harvard Univ., Cambridge, Mass.] Observed prey of the hawks consisted mainly of grasshoppers and *Anolis* lizards.--Courtesy/ Paul A. Stewart.

Junge, C. EL CÓNDOR EN LIBERTAD Y EN CAUTIVERIO. [THE CONDOR IN FREEDOM AND CAPTIVITY. (AVES).] *An. Acad. Chilena Cienc. Nat.* 30: 137-140. 1967. [From Biol. Abstr. 51(13), 1970. In Spanish.] *WR 139: 107*
[Acad. Chilena Cienc. Nat., Santiago, Chile.]

Konig, Claus. SECHSJAEHRIGE UNTERSUCHUNGEN AN EINER POPULATION DES RAUHFUSS-KAUZES, *AEGOLIUS FUNEREUS* (L.). [SIX-YEAR OBSERVATIONS OF A POPULATION OF TENGMALMAS OWL *(AEGOLIUS FUNEREUS* (L.)*)*.] *J. Ornithol.* 110(2): 133-147. 1969. [From Biol. Abstr. 51(7), 1970. In German with English summ.] *WR 139: 107*
[Staatl. Vogelschutswarte Baden-Wurttemberg, Ludwigsburg, Germany.]

Kučera, Ladislav. DIE VERBREITUNG DES UHUS *(BUBO BUBO)* IM LANDSCHAFTSSCHUTZ-GEBIET SUMAVA (BÖHMERWALD). [THE DISTRIBUTION OF EAGLE-OWLS *(BUBO BUBO)* IN THE PRESERVE (BOHEMIAN FOREST).] *Ornithol. Mitteil.* 22(3): 63-65, 2 figs. Mar. 1970. In German. *WR 139: 107*
[Susice, Czechoslovakia.]

Kuhk, Rudolf. STAND UND NOTWENDIGKEITEN DES GRIEFVOGELSCHUTZES IN DER BUNDES-REPUBLIK DEUTSCHLAND. [THE STATUS OF PROTECTION OF DIURNAL BIRDS OF PREY IN WEST GERMANY AND FUTURE REQUIREMENTS.] *Angew. Ornithol.* 3(2): 59-65. 1968. [From Biol. Abstr. 51(8), 1970. In German with English and French summ.] *WR 139: 107*

Leach, Howard R. OPERATIONAL MANAGEMENT PLAN FOR CALIFORNIA CONDOR. *Calif. Dept. Fish & Game.* [44 p.] May 1970. *WR 139: 108*
Some problems considered are: protection of habitat, evaluation of habitat changes affecting the condor, supplemental feeding, and education of the public.

Littlefield, Carroll D. A MARSH HAWK ROOST IN TEXAS. *Condor* 72(2): 245. Apr. 1970. *WR 139: 108*
[Malheur Natl. Wildl. Refuge, Box 113, Burns, Oreg.] The roost consisted of a 30-acre playa lake with an extensive stand of smartweed *(Polygonum* spp.) and unidentified grasses. As many as 66 hawks were counted at the roost.--Courtesy/ Paul A. Stewart.

Locke, Louis, and John A. Newman. PARATYPHOID IN A BARN OWL. *Chesapeake Sci.* 11(1): 67-68. Mar. 1970. *WR 139: 108*
[Patuxent Wildl. Res. Center, Laurel, Md.] "In view of the pathological findings and the location of the organism, the authors believe this represents an actual case of paratyphoid infection in a barn owl and was responsible for the owl's death."

Luttich, Stuart, Donald H. Rusch, E. Charles Meslow, and Lloyd B. Keith. ECOLOGY OF RED-TAILED HAWK PREDATION IN ALBERTA. *Ecology* 51(2): 190-203, 4 figs. Early Spring 1970. *WR 139: 108*
[Univ. Wis., Madison.] Examines effects of prey density and habitat type on food habits of the red-tailed hawk *(Buteo jamaicensis)* and assesses rate of predation of the snowshoe hare, ruffed grouse, and Richardson's grouse.--Courtesy/ Paul A. Stewart.

Mikkola, Heimo. ON THE ACTIVITY AND FOOD OF THE PYGMY OWL *GLAUCIDIUM PASSERINUM* DURING BREEDING. *Ornis Fennica* 47(1): 10-14, 1 fig. 1970. In English with Finnish summ. *WR 139: 108*
[Pateniemi, Jukurikuja, Finland.] The circadian rhythm of the pygmy owl is directly influenced by the light. Influenced by the differences in light intensity, the activity of the pygmy owl differs in Austria, southern Norway and central Sweden from its activity in Finland. The female and three young ate at the nest an average of 4.6 preys in twenty-four hours. From 154 preys 57% were bank voles and field voles and 38% birds.--From summ.

Mikkola, Heimo. ZUR ERNAHRUNG DES SPERLINGSKAUZES *(GLAUCIDIUM PASSERINUM)* ZUR BRUTZEIT. [ON THE FEEDING HABITS OF THE PYGMY OWL *(GLAUCIDIUM PASSERINUM)* DURING BREEDING.] *Ornithol. Mitteil.* 22(4): 73-75, 3 figs. Apr. 1970. In German. *WR 139: 108*
[Pateniemi, Jukurikuja, Finland.]

Mikkola, Kauri. ZUR UBERWINTERUNG EINIGER KLEINSAUGERFRESSENDEN VOGELARTEN IN FINNLAND. [ON THE HIBERNATION OF SOME SMALL MAMMAL-EATING SPECIES OF BIRDS IN FINLAND.] *Ornis Fennica* 45(2): 48-58. 1968. [From Biol. Abstr. 51(4), 1970. In German with Finnish summ.] *WR 139: 108*
[Univ. Helsinki, Helsinki, Finland.] *"Buteo lagopus, Buteo buteo, Falco tinnunculus, Lanius excubitor, Asio otus,* and *Asio flammeus."*

Murray, John B. ESCAPED AMERICAN RED-TAILED HAWK NESTING WITH BUZZARD IN MIDLOTHIAN. *Scottish Birds* 6(1): 34-37. Spring 1970. *WR 139: 108*
"Buteo jamaicensis and *Buteo buteo."*

Peshkov, B. I. [THE BIOLOGY OF THE UPLAND BUZZARD *(BUTEO LEUCOCEPHALUS).*] *Izvest. Irkutsk. Nauch.-Issled. Protivochumnogo Inst. Sib. Dal'nego Vost* 27: 167-174. 1968. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1969, no. 8I399. Transl. of Russian abstr.] *WR 139: 108*

Prestt, Ian, D. J. Jefferies, and J. W. Macdonald. POST-MORTEM EXAMINATIONS OF FOUR ROUGH-LEGGED BUZZARDS. *British Birds* 61(10): 457-465. Oct. 1968. *WR 139: 109*

[Monks Wood Exptl. Sta., Huntingdon, England.] Autopsies suggested death by poisoning. Dieldrin residues in the livers of three were 25.0, 15.0 and 19.0 parts per million and in the fourth 0.05 parts per million. The circumstances and ante-mortem and post-mortem examinations strongly indicated that all but the last had been poisoned by dieldrin obtained through feeding on grain-eating birds which previously had been poisoned by cereal seeds dressed with dieldrin.--From summ.

Rockenbauch, Dieter. SIEDLUNGSDICHTE UND BRUTERGEBNIS BEI TURMFALKEN *(FALCO TINNUNCULUS)* UND WALDOHREULEN *(ASIO OTUS)* IN DEN EXTREMJAHREN 1965-1967 AUF DER SCHWABISCHEN ALB. [POPULATION DENSITY AND BREEDING SUCCESS OF KESTRELS *(FALCO TINNUNCULUS)* AND LONG-EARED OWLS *(ASIO OTUS)* IN THE YEARS 1965-1967 IN SWABIAN ALB (GERMANY).] *Vogelwelt* 89(5): 168-174, illus. 1968. [From Biol. Abstr. 51(11), 1970. In German with English summ.] *WR 139: 109*

Rockenbauch, Dieter. VOM RÜCKGANG UND SCHUTZ DER WANDERFALKEN *(FALCO PEREGRINUS)*. [ON THE DECLINE AND PROTECTION OF THE PEREGRINE FALCON *(FALCO PEREGRINUS)*.] *Ornithol. Mitteil.* 22(2): 35-38. Feb. 1970. In German. *WR 139: 109*

[Wölkstrasse 71, Geislingen/Steige, Germany.]

Rybar, Petr. DIE ZWEIFARBIGE FLEDERMAUS *(VESPERTILIO MURINUS L.)* UND ANDERE KLEINE WIRBELTIERE IN DER NAHRUNG DER SCHLEIEREULE *(TYTO ALBA GUTTATA* BREHM) IN CASTOLOVICE (ÖSTBOEHMEN). [THE BI-COLORED BAT *(VESPERTILIO MURINUS L.)* AND OTHER SMALL VERTEBRATES IN THE FOOD OF THE BARN OWL *(TYTO ALBA GUTTATA* BREHM) IN CASTOLOVICE (EASTERN BOHEMIA).] *Zool. Listy* 18(3): 239-246. 1969. [From Biol. Abstr. 51(12), 1970. In German with English summ.] *WR 139: 109*

[Kreisstelle Staalichen Denkmals- und Natur. in Pardubice, Hradec Kralove, Czechoslovakia.]

Schoennagel, Erich. NIEDERSACHSEN SCHÜTZT SEINE LETZTEN GREIFVÖGEL. [LOWER SAXONY PROTECTS ITS LAST BIRDS OF PREY.] *Ornithol. Mitteil.* 22(4): 82-83. Apr. 1970. In German. *WR 139: 109*

[Am. Meisenbrink 14, Hameln, Germany.]

Scott, R. E. ROUGH-LEGGED BUZZARDS IN BRITAIN IN THE WINTER OF 1966/67. *British Birds* 61(10): 449-455, 5 figs. + 4 pls. Oct. 1968. *WR 139: 109*

[Dungeness Bird Observatory, Romney Marsh, Kent, England.] At least 57 individuals are known to have wintered in Britain, the majority of them in the south-east. Most had departed by late March. Details are given on the previous population range. Brief notes are included on observations of mobbing by other birds, on roosting, and food.--From summ.

Smith, Neal G. NESTING OF KING VULTURE AND BLACK HAWK-EAGLE IN PANAMÁ. *Condor* 72(2): 247-248. Apr. 1970. *WR 139: 109*

[Smithsonian Trop. Res. Inst., P.O. Box 2072, Balboa, Canal Zone.] *"Sarcoramphus papa* and *Spizaetus tyrannus."*--Courtesy/ Paul A. Stewart.

Southern, William E. MARSH HAWK CHASES CROWS MOBBING OWL. *Wilson Bull.* 82 (1): 98-99. Mar. 1970. *WR 139: 109*

[Northern Ill. Univ., DeKalb.] The female marsh hawk chased each of the eight crows until they left the immediate area, then flew away. The crows returned and resumed mobbing activities around the owl *(Bubo virginianus)*, at which point the hawk reappeared and repeated the process.--Courtesy/ Paul A. Stewart.

Sperber, Georg. ERFOLGREICHE DREIERBRUT UND ANDERE BEOBACHTUNGEN ÜBER DEN WESPENBUSSARD *(PERNIS APIVORUS).* [SUCCESSFUL THIRD BROOD AND OTHER OBSERVATIONS OF THE HONEY-BUZZARD *(PERNIS APIVORUS).*] *Ornithol. Mitteil.* 22(3): 60-62, 1 fig. Mar. 1970. In German. *WR 139: 110*
[Nationalparkamt Bay. Wald, Spiegelau, Germany.]

Stepanyan, L. S. [OBSERVATIONS ON THE FALCON *(FALCO PELEGRINOIDES BABYLONICUS* SCLATER*)* IN CENTRAL ASIA.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(6): 37-48, illus. 1969. [From Biol. Abstr. 51(11), 1970. In Russian with English summ.] *WR 139: 110*

Suetens, W., and P. Van Groenendael. NOTES SUR DEUX OISEAUX DE PROIE DE LA YOUGOSLAVIE ORIENTALE: FAUCON SACRE, *FALCO CHERRUG* GRAY, ET PYGARGUE A QUEUE BLANCHE, *HALIAEETUS ALBICILLA* (LINNE). [NOTES ON TWO BIRDS OF EASTERN YUGOSLAVIA: THE SAKERFALCON, *FALCO CHERRUG* GRAY, AND THE WHITE-TAILED EAGLE, *HALIAEETUS ALBICILLA* (LINNAEUS).] *Gerfaut* 58(1/2): 78-93, illus. 1968. [From Biol. Abstr. 51(11), 1970. In French with Dutch and English summ.] *WR 139: 110*
[Molenheidebaan 111, Heverle, Brabant, Belgium.]

Terasse, J. F., and M. Terasse. DECOUVERTE ET CONNAISSANCE DE LA NATURE: LES VAUTOURS DE FRANCE. [DISCOVERY AND KNOWLEDGE OF NATURE: THE VULTURES OF FRANCE.] *Courr. Nature Homme Oiseau* 5: 17-19, illus. 1968. [From Biol. Abstr. 51(13), 1970.] *WR 139: 110*

Thiollay, J. M. ESSAI SUR LES REPACES DU MIDI DE LA FRANCE. DISTRIBUTION, ECOLOGIE. TENTATIVE DE DÉNOMBREMENT (SUITE). [REPORT ON THE RAPTORS OF THE SOUTH OF FRANCE: DISTRIBUTION, ECOLOGY. ATTEMPT AT ENUMERATION (CONTINUED).] *Alauda* 36(1/2): 52-62. 1968. [From Biol. Abstr. 51(11), 1970. In French.] *WR 139: 110*

Thiollay, J. M. ESSAI SUR LES RAPACES DU MIDI DE LA FRANCE. DISTRIBUTION. ECOLOGIE. [CONTINUED]. [STUDY ON THE BIRDS OF PREY IN MIDI FRANCE (CONTINUED).] *Alauda* 36(3): 177-189. 1968. [From Biol. Abstr. 51(5), 1970. In French.] *WR 139: 110*
"Circaetus gallicus gallicus."

Wahlstedt, J. [HUNTING, FEEDING AND VOCALIZATIONS OF THE GREAT GRAY OWL *(STRIX NEBULOSA).*] *Vår Fågelvärld* 28: 89-101. 1969. [From Auk 87(2), 1970. In Swedish with English summ.] *WR 139: 110*

Wolhuter, Bruce R., and Frank Kish. COURTSHIP DISPLAY OBSERVED BETWEEN TWO SPECIES OF BUTEOS. *Wilson Bull.* 82(1): 96-97. Mar. 1970. *WR 139: 110*
[Univ. Kans. Mus. Nat. Hist., Lawrence.] Courtship displays between a female redtail and a male Swainson's hawk were observed in the flight cage at Topeka Zoo. Apparently copulation did not occur.--Courtesy/ Paul A. Stewart.

BLACKBIRDS, STARLINGS, CROWS

Folk, Čestmír. DAS NISTEN UND DIE POPULATIONSDYNAMIK DER DOHLE *(CORVUS MONEDULA* L.*)* IN DER CSSR. [THE NESTING AND POPULATION DYNAMICS OF THE JACKDAW *(CORVUS MONEDULA* L.*)* IN CZECHOSLOVAKIA.] *Zool. Listy* 17(3): 221-236. 1968. [From Biol. Abstr. 51(11), 1970. In German with English summ.] *WR 139: 110*
[Czechoslovakian Acad. Sci., Brno, Czechoslovakia.]

Hair, Jay D., and Donald J. Forrester. THE HELMINTH PARASITES OF THE STARLING *(STURNUS VULGARIS* L.*)*: A CHECKLIST AND ANALYSIS. *Am. Midland Nat.* 83(2): 555-564. Apr. 1970. *WR 139: 110*
[Univ. Alberta, Edmonton, Alberta, Canada.] Abstract: A list of helminth parasites of starlings *(Sturnus vulgaris* L.*)* with reference to their geographic location was compiled. Eighty-one species of helminths, representing 51 genera,

have been reported by numerous authors in different parts of the world. They comprise 28 species of Trematoda, 14 of Cestoda, 39 of Nematoda, and 9 of Acanthocephala. In all instances more genera and species have been reported from starlings from the eastern than from the western hemisphere. Only 11 out of the list of 81 species were common to birds from both hemispheres. Possible reasons for these observations are suggested.

Holcomb, Larry C. PROLONGED INCUBATION BEHAVIOUR OF RED-WINGED BLACKBIRD INCUBATING SEVERAL EGG SIZES. *Behaviour* 36(1-2): 74-83 + 1 fig. on 1 pl. 1970. In English with German summ. *WR 139: 111*

[Creighton Univ., Omaha, Nebr.] Summary: New records for prolonged incubation of eggs are summarized. The advantages for adaptation to a prolonged period of incubation only a few days longer than the normal incubation period is discussed. Non-passerines tend to remain on unhatched eggs for a relatively longer period of time compared to normal incubation period length than do passerines, with such notable exceptions as Columbids. Experiments were performed on wild incubating red-winged blackbird *(Agelaius phoeniceus)* females to determine some of the roles of the egg as a stimulus in prolongation of incubation. Five sizes of eggs of normal shape and color were introduced into nests after the normal clutch was complete. Very small or very large eggs were nearly always abandoned immediately. Normal size eggs and eggs 0.5 X and 1.5 X the dimensions of normal eggs were usually incubated. More of the 0.5 X eggs were abandoned on the first or second day than in the 1 X and 1.5 X sizes and the mean length of incubation was 15.06, 19.38 and 19.13 days, respectively. There was no difference in the mean length of incubation on the 1 X and 1.5 X eggs. There was a significantly longer incubation on 1 X and 1.5 X eggs than on 0.5 X eggs. It is concluded that 1.5 X eggs were not super-normal stimuli but that 0.5 X eggs were sub-normal stimuli for prolonging incubation. Hypotheses are developed for explaining the differences in the stimulating capacities of different egg sizes. The incubation patch as a receiver of stimuli may play a primary role. The physiological condition of the incubating female especially with regard to levels of different hormone titers may be most important in maintaining the incubation patch as an effective receiver of stimuli. The shape of the original nest, size of eggs and size of the female also may determine how much surface area of the brood patch is in direct contact with eggs.

Hough, K. BEHAVIOUR OF WHITE-BACKED MAGPIE. *Emu* 68: 282. 1969. [From Auk 87(2), 1970.] *WR 139: 111*

"Gymnorhina hypoleuca."

Jones, J., Jr. SOME PARASITES OF THE COMMON CROW, *CORVUS BRACHYRHYNCHOS* BREHM, FROM OHIO. *Ohio J. Sci.* 68: 25-31. 1968. [From Auk 87(2), 1970.] *WR 139: 111*

Keeler, James E. BLACKBIRD STUDIES. *Ala. Dept. Conserv., Div. Game & Fish.* iv + 51 p., 12 [figs.]. [1970.] *WR 139: 111*

Research showed that redwinged blackbirds appeared to compete with mourning doves for food more readily than other blackbirds, since their winter food habits are similar. Grackles and starlings are considered the least important since most of their food is not preferred by doves. Most of the corn pieces consumed by grackles and starlings were taken from cattle and hog manure. Blackbirds and starlings, by flying and wheeling near feeding doves, altered the doves' feeding habits. When this occurred, doves would often times leave the field. Recent studies in Alabama show that blackbirds individually are not serious competitors of the mourning dove for food, but when present in the millions, their sheer force of numbers puts the dove at a serious disadvantage in food competition.--From abstr.

LeFebvre, Paul W., and John L. Seubert. SURFACTANTS AS BLACKBIRD STRESSING AGENTS. *Proc. 4th Vertebrate Pest Conf.* p. 156-161. 1970. *WR 139: 111*

[Patuxent Wildl. Res. Center, Gainesville, Fla.] See Dana, *WR 139: 16.*

Power, Dennis M. GEOGRAPHIC VARIATION OF RED-WINGED BLACKBIRDS IN CENTRAL NORTH AMERICA. *Univ. Kans. Publications, Mus. Nat. Hist.* 19(1): 1-83, 32 figs. 20 Apr. 1970. *WR 139: 112*

Includes sections on methods, chronological variation, differences due to age, univariate analysis of geographic variation, discussion of univariate comparisons, multivariate analysis of geographic variation, and comments on taxonomy of *Agelaius phoeniceus*.

Rowley, Ian. AN EVALUATION OF PREDATION BY "CROWS" ON YOUNG LAMBS. *CSIRO Wildl. Res.* 14(2): 153-197, 8 figs. Dec. 1969. *WR 139: 112*

[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: In south-east Australia, *Corvus coronoides* and *Corvus mellori* are slow to reach sexual maturity and spend their immature period in nomadic flocks. Seasonal fluctuations in the numbers of corvids present in any one district correspond to differences in the availability of food and are due largely to the movements of nomadic flocks. Lambing flocks of sheep provide a local abundance of food, mainly in the form of afterbirths and carrion. Few healthy lambs are killed by corvids but many sick animals are finished off by them, a distinction not appreciated by most farmers. Dystocia, twin births, weakness, and desertion are the main circumstances that predispose lambs to serious attacks. Aviary experiments suggest that on the south-east mainland of Australia *C. coronoides* and *C. tasmanicus* are the only species capable of damaging lambs. A change in sheep management, particularly by providing shelter for lambing flocks, will ensure a greater and more permanent improvement in lambing results than will control of corvids which at best has only a temporary effect.

Schwarb, Robert G., and Dale F. Lott. TESTIS GROWTH AND REGRESSION IN STARLINGS *(STURNUS VULGARIS)* AS A FUNCTION OF THE PRESENCE OF FEMALES. *J. Exptl. Zool.* 171(1): 39-42, illus. 1969. [From Biol. Abstr. 51(2), 1970.] *WR 139: 112*

[Univ. Calif., Davis.]

Selander, Robert K. PARENTAL FEEDING IN A MALE GREAT-TAILED GRACKLE. *Condor* 72(2): 238. Apr. 1970. *WR 139: 112*

[Univ. Texas, Austin.] *"Quiscalus mexicanus."*--Courtesy/ Paul A. Stewart.

Tosh, Fred E., Irene L. Doto, Sheldon B. Beecher, and Tom D. Y. Chin. RELATIONSHIP OF STARLING-BLACKBIRD ROOSTS AND ENDEMIC HISTOPLASMOSIS. *Am. Rev. Resp. Dis.* 101(2): 283-288. 1970. [From Biol. Abstr. 51(12), 1970. In English with Spanish and French summ.] *WR 139: 112*

[Natl. Commun. Dis. Center, Kansas City, Kans.]

West, Richard R., and James H. Dunks. REPELLING BOAT-TAILED GRACKLES FROM SPROUTING CORN WITH A CARBAMATE COMPOUND. *Texas J. Sci.* 21(2): 231-233, 2 figs. Nov. 1969. *WR 139: 112*

[Denver Wildl. Res. Center, Denver, Colo.] Protection of sprouting corn from *Cassidix mexicanus* by treating the seed with DRC-736 (4-(methylthio)-3,5-xylyl N-methylcarbamate) was evaluated in March and April, 1968 on the Texas Parks and Wildlife Departments' Longoria Unit of the Las Palomas Wildlife Management Area. Two treatments (0.5% DRC-736 and a control) were evaluated 50 times on 0.016-acre plots in each of two fields. Treated plots lost about 800 plants while the control lost 2,650. The 0.5 DRC-736 treatment saved $20 worth of corn for every acre treated.

Woronecki, Paul P., Joseph L. Guarino, Jerome F. Besser, and John W. De Grazio. CARBAMATE BAITS DISCOURAGE BLACKBIRDS FROM USING FEEDLOTS. *Proc. 4th Vertebrate Pest Conf.* p. 173-178. 1970. *WR 139: 112*

[Bur. Sport Fisheries & Wildl., Davis, Calif.] See Dana, *WR 139: 16*.

OTHER BIRDS

Al-Rawy, Mohammed, and P. V. George. PRELIMINARY REPORT ON THE BREEDING BIOLOGY OF THE COMMON SWALLOW *HIRUNDO RUSTICA RUSTICA* LINNAEUS IN BAGHDAD. *Bull. Biol. Res. Cent.* (Baghdad) 2: 57-61. 1966. [From Biol. Abstr. 51(12), 1970. In English with Arabic summ.] *WR 139: 113*
[Univ. Baghdad, Baghdad, Iraq.]

Ambedkar, V. C. OBSERVATIONS ON THE BREEDING BIOLOGY OF FINN'S BAYA *(PLOCEUS MEGARHYNCHUS* HUME) IN THE KUMAON TERAI. *J. Bombay Nat. Hist. Soc.* 65(3): 596-607, illus. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 113*

Anderson, Daniel W., and Joseph J. Hickey. OOLOGICAL DATA ON EGG AND BREEDING CHARACTERISTICS OF BROWN PELICANS. *Wilson Bull.* 82(1): 14-28, 1 fig. Mar. 1970. *WR 139: 113*
[Univ. Wis., Madison.] Shell thickness and weights of eggs of brown pelicans *(Pelecanus occidentalis)* collected since 1949 were 15-25% less than those collected before 1949.--Courtesy/ Paul A. Stewart.

Berger, Andrew J. THE EGGS AND YOUNG OF THE PALILA, AN ENDANGERED SPECIES. *Condor* 72(2): 238-240, 2 figs. Apr. 1970. *WR 139: 113*
[Univ. Hawaii, Honolulu.] *"Psittirostra bailleui."*--Courtesy/ Paul A. Stewart.

Bock, Carl E. THE ECOLOGY AND BEHAVIOR OF THE LEWIS WOODPECKER *(ASYNDESMUS* LEWIS*). Univ. Calif. Publ. Zool.* no. 92. 91 p., 15 figs. + 6 pls. 25 June 1970. Price $3.00. *WR 139: 113*
Habitat and distribution, breeding habitat, winter range, migration patterns, feeding ecology and behavior, food storage, intraspecific competition, interactions with the acorn woodpecker *(Melanerpes formicivorus)* breeding biology, and reproductive behavior are discussed. The Lewis woodpecker is primarily insectivorous, and depends upon stored acorns and almonds during winter. Storage sites form the basis for winter territorial behavior; breeding *Asyndesmus* concentrate in areas where free-living insects are abundant.

Carroll, A. L. K. THE PUKEKO *(PORPHYRIO MELANOTUS)* IN NEW ZEALAND. *Notornis* 16(2): 101-125. 1969. [From Biol. Abstr. 51(9), 1970.] *WR 139: 113*

Danilov, Nikolai, Evgenii Nekrasov, Lev Dobrinskii, and Ken Kopein. [ON PROBLEMS OF POPULATION CHANGES / *PASSER DOMESTICUS* L. AND *P. MONTANUS* L.] *Ekologia Polska--Ser. A* 17(29): 489-501. 1969. In Russian with Polish summ. *WR 139: 113*

Dhondt, A. A., and J. Hublé. AGE AND TERRITORY IN THE GREAT TIT *(PARUS M. MAJOR* L.*). Appl. Ornithol.* 3: 20-24. 1968. [From Auk 87(2), 1970.] *WR 139: 113*

Dyrcz, Andrzej. THE ECOLOGY OF THE SONG-THRUSH *(TURDUS PHILOMELOS* BR.*)* AND BLACKBIRD *(TURDUS MERULA* L.*)* DURING THE BREEDING SEASON IN AN AREA OF THEIR JOINT OCCURRENCE. *Ekologia Polska--Ser. A* 17(39): 735-793, 5 figs. Dec. 1969. In English with Polish summ. *WR 139: 113*
[Univ. Wrocław, Wrocław, Poland.] Abstract: Observations were made in three different habitats. The micro-habitats occupied by *Turdus philomelos* Br. and *Turdus merula* L. proved to be almost identical. The nestlings' food was very similar in both species. The blackbird, however, exhibited a lesser degree of specialization in relation to several of the habitat elements than did the song-thrush. The author interprets the similarity of the ecological niches of these species as proof of the historically young occurrence of the two species in one habitat. As the character of the habitats changed by man becomes more mosaic the less specialized species, the blackbird, ousts the song-thrush, as is also shown by data in literature.

420-877 O - 71 - 8

Edgar, A. T. ESTIMATED POPULATION OF THE RED-BREASTED DOTTEREL. *Notornis* 16: 85-100. 1969. [From Auk 87(2), 1970.] *WR 139: 114*
"Charadrius obscurus."

Friedmann, Herbert. ADDITIONS TO KNOWLEDGE OF THE YELLOW-THROATED GLOSSY CUCKOO, *CHRYSOCOCCYX FLAVIGULARIS*. *J. Ornithol.* 110(2): 176-180. 1969. [From Biol. Abstr. 51(8), 1970. In English with German summ.] *WR 139: 114*

Gray, R. S. BREEDING BIOLOGY OF RIFLEMAN AT DUNEDIN. *Notornis* 16(1): 15-22, illus. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 114*
"Acanthisitta chloris."

Haneda, Kenzo, and Kesai Teranishi. [LIFE HISTORY OF THE EASTERN GREAT REED WARBLER *(ACROCEPHALUS ARUNDINACEUS ORIENTALIS)*: I. BREEDING BIOLOGY.] *Japanese J. Ecol.* 18(3): 100-109, illus. 1968. [From Biol. Abstr. 51(1), 1970. In Japanese with English summ.] *WR 139: 114*
[Shinshu Univ., Nagano, Japan.]

Haneda, Kenzo, and Kesai Teranishi. [LIFE HISTORY OF THE EASTERN GREAT REED WARBLER *(ACROCEPHALUS ARUNDINACEUS ORIENTALIS)*: II. POLYGYNY AND TERRITORY.] *Japanese J. Ecol.* 18(5): 204-212, illus. 1968. [From Biol. Abstr. 51(5), 1970. In Japanese with English summ.] *WR 139: 114*
[Shinshu Univ., Nagano, Japan.]

Harris, M. P. BLACK-BROWED ALBATROSS *(DIOMEDEA MELANOPHRYS)* AND OTHER SEA-BIRDS NEAR GUAYAQUIL, ECUADOR. *Ardea* 56: 284-285. 1968. [From Auk 87(2), 1970.] *WR 139: 114*

Jackson, Jerome A. SOME ASPECTS OF THE POPULATION ECOLOGY OF DOWNY WOODPECKERS IN RELATION TO A FEEDING STATION. *Iowa Bird Life* 40(2): 27-34, 1 fig. June 1970. *WR 139: 114*
[Univ. Kans., Lawrence.] Use of the station has been correlated with energy demands and availability of natural food and with differential seasonal movements and territoriality of the sexes. Interactions among downy woodpeckers and between downies and other species of birds are described: female downies are generally subordinate to males; downies are usually subordinate to larger birds; mutual tolerance between downy woodpeckers and black-capped chickadees may be related to association of the species in winter foraging flocks.--From summ.

Jarvis, M. J. F. THE WHITE-BREASTED CORMORANT IN SOUTH AFRICA. *Ostrich* 4 (1&2): 118-119. Mar. 1970. *WR 139: 114*
[Univ. Cape Town, Rondebosch, Cape Province, South Africa.] *"Phalacrocorax lucidus."*

Lill, Alan. NIDIFICATION IN THE CHANNEL-BILLED TOUCAN *(RAMPHASTOS VITELLINUS)* IN TRINIDAD, WEST INDIES. *Condor* 72(2): 235-236. Apr. 1970. *WR 139: 114*
[Wm. Beebe Trop. Res. Sta., Simla, Arima, Trinidad, West Indies.] The March-June breeding season is supported, but the clutch size and nest height were found to be more variable than was earlier suspected.--Courtesy/ Paul A. Stewart.

Lindberg, Peter. NAGOT OM STORLOMMENS *(GAVIA ARCTICA* L.*)* OCH SMALOMMENS *(GAVIA STELLATA* L.*)* EKOLOGI. [ON THE ECOLOGY OF THE BLACK-THROATED DIVER *(GAVIA ARCTICA)* AND THE RED-THROATED DIVER *(GAVIA STELLATA).*] *Zool. Revy* 30(3-4): 83-88, illus. 1968. [From Biol. Abstr. 51(7), 1970. In Swedish with English summ.] *WR 139: 114*
[Zool. Inst., Goteborg, Sweden.]

Loshakov, A. S. [ECOLOGY OF THE BLACK SHEARER *(APUS APUS* L.*).*] *Vestnik Zool.* 3(4): 88-89. 1969. [From Biol. Abstr. 51(3), 1970. In Russian with English summ.] *WR 139: 114*
[Melitopol Pedagog. Inst., Melitopol, USSR.]

Maher, William J. THE POMARINE JAEGER AS A BROWN LEMMING PREDATOR IN NORTHERN ALASKA. *Wilson Bull.* 82(2): 130-157, 5 figs. June 1970. *WR 139: 115*
[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] The following are discussed: food habits of the pomarine jaeger *(Stercorarius pomarinus)*, jaeger breeding density as related to density of brown lemmings *(Lemmus trimucronatus)*, and effect of jaeger predation on the lemming population.--Courtesy/ Paul A. Stewart.

Manucharyan, G. G. [THE ECOLOGY OF THE WARBLER *SYLVIA MYSTACEA* MENETRIES IN THE ARMENIAN SSR.] *Uch. Zap. Yerevan Univ. Estestv. Nauk* 2: 107-111. 1967. [From Biol. Abstr. 51(8), 1970, from Referat. Zhur., Biol., 1968, no. 10I419. Transl. of Russian abstr.] *WR 139: 115*

Moynihan, M. THE "COEREBINI": A GROUP OF MARGINAL AREAS, HABITATS, AND HABITS. *Am. Nat.* 102: 578-581. 1968. [From Auk 87(2), 1970.] *WR 139: 115*

Myrcha, Andrzej, and Jan Pinowski. WEIGHTS, BODY COMPOSITION, AND CALORIC VALUE OF POSTJUVENAL MOLTING EUROPEAN TREE SPARROWS *(PASSER MONTANUS)*. *Condor* 72(2): 175-181, 5 figs. Apr. 1970. *WR 139: 115*
[Polish Academy Sci., Nowy Świat 72, Warsaw, Poland.] Body weights, water content, fat content, lean dry material, ash content, dry weight, caloric value, and molt in relation to annual cycle are discussed.--Courtesy/ Paul A. Stewart.

Pikula, Jiri. DER ZEITLICHE BRUTVERLAUF BEI *TURDUS PHILOMELOS* BREHM, 1831, IN DER CSSR. [THE COURSE OF BREEDING OF *TURDUS PHILOMELOS* BREHM, 1831 IN CZECHOSLOVAKIA.] *Zool. Listy* 18(3): 263-274, illus. 1969. [From Biol. Abstr. 51(11), 1970. In German with English summ.] *WR 139: 115*
[Czech. Acad. Sci., Brno, Czechoslovakia.]

Reid, Brian. SURVIVAL STATUS OF THE TAKAHE, *NOTORNIS MANTELLI*, OF NEW ZEALAND. *Biol. Conserv.* 1(3): 237-240, illus. 1969. [From Biol. Abstr. 51 (11), 1970.] *WR 139: 115*
[New Zealand Wildl. Serv., Dept. Intern. Aff., Wellington, New Zealand.]

Rendahl, Hialmar. VERBREITUNG UND ZUGVERHÄLTNISSE DER SCHWEDISCHEN SCHAFSTELZEN *(MOTACILLA F. FLAVA* L. UND *MOTACILLA F. THUNBERGI* BILLB.*)*. [DISTRIBUTION AND CONDITIONS OF MIGRATION OF THE SWEDISH WAGTAILS *(MOTACILLA F. FLAVA* L. AND *MOTACILLA F. THUNBERGI* BILLB.*)*.] *Ark. Zool.* 20(5): 381-408. 1968. [From Biol. Abstr. 51(5), 1970. In German.] *WR 139: 115*

Rutter, Russell J. A CONTRIBUTION TO THE BIOLOGY OF THE GRAY JAY *(PERISOREUS CANADENSIS)*. *Canadian Field-Naturalist* 83(4): 300-316, illus. Oct.-Dec. 1969. *WR 139: 115*
[Ontario Dept. Lands & Forests, Algonquin Park, Ontario, Canada.] Territory, food and storage, predation, and nesting are discussed.

Samuel, David Evan. THE ECOLOGY, BEHAVIOR, AND VOCALIZATIONS OF SYMPATRIC BARN AND CLIFF SWALLOWS IN WEST VIRGINIA. *Ph.D. thesis, W. Va. Univ.* 142 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 115*
A comparison of the ecology, behavior, and vocalizations of barn and cliff swallows during the breeding season in order to learn how they avoid competition.

Sapargel'dyev, M. [DISPERSION AND SEVERAL CHARACTERISTICS OF THE ECOLOGY OF RUST-COLORED TREE-CREEPER.] *Izvest. Akad. Nauk Turkm. SSR Ser. Biol. Nauk* 2: 41-47, illus. 1969. [From Biol. Abstr. 51(4), 1970. In Russian.] *WR 139: 115*
"Ochotona rufescens."

Short, Lester L. THE HABITS AND RELATIONSHIPS OF THE MAGELLANIC WOODPECKER. *Wilson Bull.* 82(2): 115-129, 9 figs. June 1970. *WR 139: 115*
[Am. Mus. Nat. Hist., New York, N.Y.] Contains discussions on ecology, habits, drumming, and vocalizations of the Magellanic woodpecker *(Campephilus magellanicus)*.--Courtesy/ Paul A. Stewart.

OTHER BIRDS--Continued

Slater, Peter J. B. THE STIMULUS TO EGG-LAYING IN THE BENGALESE FINCH. *J. Zool.* 158(4): 427-440, illus. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 116*
[Univ. Sussex, Brighton, Sussex, England.]

Timken, Richard L. FOOD HABITS AND FEEDING BEHAVIOR OF THE BALTIMORE ORIOLE IN COSTA RICA. *Wilson Bull.* 82(2): 184-188. June 1970. *WR 139: 116*
[Wayne State Coll., Wayne, Nebr.] Baltimore orioles *(Icterus galbula)* fed chiefly in the early morning and to a lesser degree in the late afternoon. Lepidoptera larvas were the chief items of food.--From summ. Courtesy/ Paul A. Stewart.

REPTILES & AMPHIBIANS

Alcala, Angel C. POPULATION BIOLOGY OF THE "FLYING" LIZARD, *DRACO VOLANS*, ON NEGROS ISLAND, PHILIPPINES. *Natur. Appl. Sci. Bull.* 20(4): 335-370, illus. 1967. [From Biol. Abstr. 51(4), 1970.] *WR 139: 116*
[Silliman Univ., Dumaguete City, Philippines.]

Ashby, K. R. THE POPULATION ECOLOGY OF A SELF-MAINTAINING COLONY OF THE COMMON FROG *(RANA TEMPORARIA)*. *J. Zool.* (London) 158(4): 453-474, illus. 1969. [From Biol. Abstr. 51(3), 1970.] *WR 139: 116*
[Univ. Durham, Durham, England.]

Auffenberg, Walter. SOCIAL BEHAVIOR OF *GEOCHELONE DENTICULATA*. *Quart. J. Fla. Acad. Sci.* 32(1): 50-58, illus. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 116*
[Univ. Fla., Gainesville.] Six adult tortoises were observed in order to determine the extent of sociability and hierarchal herd organization.

Ballinger, Royce E., Ken R. Marion, and Owen J. Sexton. THERMAL ECOLOGY OF THE LIZARD, *ANOLIS LIMIFRONS* WITH COMPARATIVE NOTES ON THREE ADDITIONAL PANAMANIAN ANOLES. *Ecology* 51(2): 246-254, 4 figs. Early Spring 1970. *WR 139: 116*
[Texas A&M Univ., College Station.] Thermal regulation in *Anolis limifrons*, seasonal variation in thermal regulation, and interspecific variation in thermoregulation are discussed.--Courtesy/ Paul A. Stewart.

Black, Jeffery. AMPHIBIANS OF MONTANA. *Mont. Wildl.* 32 p., illus. Jan. 1970. *WR 139: 116*
[Univ. Okla., Norman.] Entire issue devoted to this article. In addition to species accounts there are sections on the amphibians of Waterton-Glacier Peace Park, raising and keeping amphibians, and the collection and preservation of amphibians. This article is "Number 1 of animals of Montana series."

Blanc, Charles P. ÉTUDES SUR LES IGUANIDAE DE MADAGASCAR: II. OBSERVATIONS SUR L'ECOLOGIE DE *CHALARODON MADAGASCARIENSIS* PETERS, 1854. [STUDIES ON THE IGUANIDAE OF MADAGASCAR: II. REMARKS ON THE ECOLOGY OF *CHALARODON MADAGASCARIENSIS* PETERS, 1854.] *Oecologia* 2(3): 292-318, illus. 1969. [From Biol. Abstr. 51(2), 1970. In French.] *WR 139: 116*
[Fac. Sci., Lab. Zool., Tananarive, Madagascar.]

Brandon, Ronald A. SIZE RANGE, SIZE AT MATURITY, AND REPRODUCTION OF *AMBYSTOMA (BATHYSIREDON) DUMERILII* (DUGÈS), A PAEDOGENETIC MEXICAN SALAMANDER ENDEMIC TO LAKE PÁTZCUARO, MICHOACÁN. *Copeia* 1970(2): 385-388, 3 figs. 1 June 1970. *WR 139: 116*
[Southern Ill. Univ., Carbondale.] Data on size and sex ratio are presented. Reproduction studies in captivity suggest a spring breeding season.

Brenner, Fred J., and Patricia E. Brenner. THE INFLUENCE OF LIGHT AND TEMPERATURE ON BODY FAT AND REPRODUCTIVE CONDITIONS OF *RANA PIPIENS*. *Ohio J. Sci.* 69(5): 305-312, illus. 1969. [From Biol. Abstr. 51(6), 1970.] *WR 139: 117*
[Thiel Coll., Greenville, Pa.]

Bullock, J. A. POPULATION ESTIMATION IN THE TORRENT FROG, *AMOLOPUS LARUTENSIS* (ANURA: RANIDAE). *J. Zool.* (London) 158(2): 167-180. 1969. [From Biol. Abstr. 51(7), 1970.] *WR 139: 117*
[Univ. Malaya, Kuala Lumpur, Malaysia.]

Busse, Klaus. CARE OF THE YOUNG BY MALE *RHINODERMA DARWINI*. *Copeia* 1970 (2): 395. 1 June 1970. *WR 139: 117*
[Univ. Chile, Casilla 9023, Santiago, Chile.]

Chłodny, Józef, and Tadeusz Mazur. FOOD REQUIREMENTS AND UTILIZATION OF FOOD BY *RANA ARVALIS* NILSS. (AMPHIBIA). *Ekologia Polska--Ser. A* 17(38): 719-733, 3 figs. 1969. In English with Polish summ. *WR 139: 117*
[Univ. Slaski, Katowice, Poland.]

Cochran, Doris M., and Coleman J. Goin. FROGS OF COLOMBIA. *Smithsonian Inst. U.S. Natl. Mus. Bull.* 288. xii + 655 p., 55 figs., 68 pls. 1970. For sale by Supt. Documents at $4.00. *WR 139: 117*
[Goin: Univ. Fla., Gainesville.] The checklist is a compilation of the knowledge presently available on Colombian frogs. The single volume includes 212 spp. and sspp. of frogs (order Anura) as identified and compiled from 39 private and museum collections from around the world. Keys to the families and genera are provided along with species description, dimensions, and color of the specimen in alcohol.

Cogger, H. G., and D. A. Lindner. MARINE TURTLES IN NORTHERN AUSTRALIA (SYSTEMATIC SURVEY). *Australian Zool.* 15(2): 150-159. 1969. [From Biol. Abstr. 51(8), 1970.] *WR 139: 117*
[Australian Mus., Sydney, Australia.]

Ernst, Carl H. HOME RANGE OF THE SPOTTED TURTLE, *CLEMMYS GUTTATA* (SCHNEIDER). *Copeia* 1970(2): 391-393, 1 fig. 1 June 1970. *WR 139: 117*
[Southwest Minn. State Coll., Marshall.] "Three methods were used to calculate home range: the minimum area, the modified minimum area, and a method proposed by Fitch (1958). When measured by minimum area methods, the home ranges were small, and the variance between the results was low. The Fitch method gave consistantly larger home ranges. Home ranges among spotted turtles overlapped in time and space, but no territoriality was displayed."

Ferreira, M. M. SOBRE A ALIMENTACÃO DA ARUANA, *CHELONIA MYDAS* LINNAEUS, AO LONGO DA COSTA DO ESTADO DO CEARA. [ON THE FEEDING HABITS OF THE GREEN TURTLE, *CHELONIA MYDAS* LINNAEUS, ALONG THE COAST OF THE STATE OF CEARA.] *Arq. Estac. Biol. Mar. Univ. Fed. Ceara* 8(1): 83-86. 1968. [From Biol. Abstr. 51(8), 1970. In Portuguese with English summ.] *WR 139: 117*
[Estacão Biol. Marinna Univ. Fed., Ceara, Brazil.]

Fischer, Klaus. UNTERSUCHUNGEN ZUR JAHRESPERIODIK DER FORTPFLANZUNG BEI MÄNNLICHEN RUINENEIDECHSEN *(LACERTA SICULA CAMPESTRIS* BETTA*)*: II. EINFLÜSSE VERSCHIEDENER PHOTOPERIODEN UND TEMPERATUREN AUF DIE PROGRESSIONS- UND DIE REGRESSIONSPHASE. [INVESTIGATIONS INTO THE ANNUAL PERIODICITY OF REPRODUCTION IN MALE LIZARDS *(LACERTA SICULA CAMPESTRIS* BETTA*)*: II. INFLUENCES OF DIFFERENT PHOTOPERIODS AND TEMPERATURES ON THE PROGRESSIVE AND REGRESSIVE PHASES.] *Z. Vergl. Physiol.* 61(4): 394-419, illus. 1968. [From Biol. Abstr. 51(2), 1970. In German with English summ.] *WR 139: 117*
[Univ. Göttingen, Göttingen, Germany.]

Fitch, Henry S. REPRODUCTIVE CYCLES OF LIZARDS AND SNAKES. *Univ. Kansas Mus. Nat. Hist.* no. 52. 247 p., 16 figs. 19 June 1970. *WR 139: 118*
[Route #3, Box 142, Lawrence, Kans.] Information on viviparity; oviparity; seasons of copulation, ovulation, oviposition or parturition and hatching; incubation and gestation periods; body development; brood size; and the relationship of these factors to the individual environmental niches are discussed for 800 species of lizards and snakes.

Franz, Richard. EGG DEVELOPMENT OF THE TAILED FROG UNDER NATURAL CONDITIONS. *Bull. Md. Herpetol. Soc.* 6(2): 27-30, 1 fig. June 1970. *WR 139: 118*
[Parkville Senior High School, 2600 Putty Hill Ave., Baltimore, Md.] *"Ascaphus truei."*

Freiberg, Marcos A. DIFERENCIAS SEXUALES SECUNDARIAS Y DESCRIPCION DEL ALOTIPO MACHO DE LA TORTUGA *PSEUDEMYS DORBIGMYI* (D. ET B.). [SECONDARY SEXUAL DIFFERENCES AND DESCRIPTION OF THE MALE ALLOTYPS OF THE TURTLE *PSEUDEMYS DORBIGMYI.*] *Acta Zool. Lilloana* 23: 389-394, illus. 1967. [From Biol. Abstr. 51(13), 1970. In Spanish with English summ.] *WR 139: 118*
[Mus. Argentina Cienc. Nat. "Bernardino Rivadavia," Buenos Aires, Argentina.]

Gibbons, J. Whitfield. TERRESTRIAL ACTIVITY AND THE POPULATION DYNAMICS OF AQUATIC TURTLES. *Am. Midland Nat.* 83(2): 404-414, 2 figs. Apr. 1970. *WR 139: 118*
[P.O. Box A, Aiken, S.C.] Abstract: A method of measuring terrestrial activity in aquatic turtles is presented. The importance of this activity is indicated in considering some aspects of the population ecology of the species involved. Based on captures in terrestrial pitfall traps, up to 30% of the turtles inhabiting a Carolina bay in South Carolina traveled onto land during an eight-month period of study. This suggests that terrestrial activity may be very important in the population dynamics of aquatic turtles. The trapping method revealed a directional trend in emigrating individuals and a random movement by immigrants. Individuals of at least four species moved back and forth between contiguous aquatic areas. Terrestrial activity could not be correlated consistently with any single environmental factor. Initial activity in spring and cessation in autumn are presumably influenced by temperature. Rainfall apparently provoked terrestrial movement in autumn but not during other parts of the year.

Greene, Harry W. FAT STORAGE IN FEMALES OF AN INTRODUCED LIZARD, *HEMIDACTYLUS TURCICUS*, FROM TEXAS. *Texas J. Sci.* 21(2): 233-235. Nov. 1969. *WR 139: 118*
[P.O. Box 855, Huntsville, Texas.]

Guenther, Rainer. PAARUNGSRUFE UND REPRODUKTIVE ISOLATIONSMECHANISMEN BEI EUROPAEISCHEN ANUREN DER GATTUNG *RANA* (AMPHIBIA). [MATING CALLS AND REPRODUCTIVE ISOLATION MECHANISMS OF EUROPEAN ANURANS OF THE GENUS *RANA* (AMPHIBIA).] *Forma Functio* 3: 263-284, illus. 1969. [From Biol. Abstr. 51(8), 1970. In German with French summ.] *WR 139: 118*

Guyetant, R. ETUDE DE L'ALIMENTATION DE JEUNES BATRACIENS ANOURES DURANT LA SAISON ESTIVALE. [STUDY OF THE FEEDING OF YOUNG FROGS IN SUMMER.] *Ann. Sci. Univ. Besancon Zool. Physiol. Biol. Anim.* 3: 69-78, illus. 1967. [From Biol. Abstr. 51(5), 1970. In French with English and German summ.] *WR 139: 118*

Harris, Herbert S., Jr. ABNORMAL PIGMENTATION IN MARYLAND AMPHIBIANS AND REPTILES. *Bull. Md. Herpetol. Soc.* 6(2): 21-27. June 1970. *WR 139: 118*
[Nat. Hist. Soc. Md., 2643 N. Charles St., Baltimore.]

Hathaway, Loline Marie. MICRODISTRIBUTION AND BEHAVIOR OF THE COLLARED LIZARD WITH SPECIAL REFERENCE TO STRUCTURE. *Ph.D. thesis, Washington Univ.* 207 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 119*
An investigation of the role of the structure of the habitat in affecting the distribution and the behavior of individuals within a species. Of seven structural features available, the lizards spent 91% of the time associated with only two of these, rock and ledge, in their daily activity period.

Heusser, H. DIE LEBENSWEISE DER ERDKROETE, *BUFO BUFO* (L.): LAICHZEIT: UMSTIMMUNG, OVULATION, VERHALTEN. [THE HABITS OF THE COMMON TOAD, *BUFO BUFO*: SPAWNING PERIOD: CHANGE, OVULATION, BEHAVIOR.] *Vierteljahrschr. Naturforsch. Ges. Zurich* 113(3): 257-289, illus. 1969. [From Biol. Abstr. 51(11), 1970. In German.] *WR 139: 119*

Heusser, H. LAICH-FRESSEN DURCH KAULQUAPPEN ALS MOEGLICHE URSACHE SPEZIFISCHER BIOTOPPRAEFERENZEN UND KURZER LAICHZEITEN BEI EUROPAEISCHEN FROSCHLURCHEN (AMPHIBIA, ANURA). [SPAWN EATING BY TADPOLES AS POSSIBLE CAUSE OF SPECIFIC BIOTOPE PREFERENCES AND SHORT BREEDING TIMES IN EUROPEAN ANURANS (AMPHIBIA, ANURA).] *Oecologia* (Berlin) 4(1): 83-88, illus. 1970. [From Biol. Abstr. 51(13), 1970. In German with English summ.] *WR 139: 119*
[Univ. Zurich, Zurich, Switzerland.]

Heusser, H., and J. Ott. WANDERTRIEB UND POPULATIONSSPEZIFISCHE SOLLZEIT DER LAICHWANDERUNG BEI DER ERDKROETE, *BUFO BUFO* (L.). [IMPULSE TO MIGRATE AND POPULATION-SPECIFICALLY SET TIME FOR THE BREEDING MIGRATION OF THE COMMON TOAD, *BUFO BUFO*.] *Rev. Suisse Zool.* 75(4): 1005-1022, illus. 1968. [From Biol. Abstr. 51(3), 1970. In German with English and French summ.] *WR 139: 119*
[Univ. Zurich, Zurich, Switzerland.]

Hoff, Carolyn L., and Fenton R. Kay. HERBIVOROUS FEEDING IN THE LIZARD *UTA STANSBURIANA STEJNEGERI*. *Southwestern Nat.* 15(1): 137-138. 1 June 1970. *WR 139: 119*
[Univ. Nev., Las Vegas.] The side-blotched lizard was reported to have fed upon *Oenothera brevipes*, possibly as a source of water.

Hussein, M. Fawzy, and R. Boulos. STUDIES ON THE HEAT DEATH OF SOME DESERT REPTILES FROM PALESTINE (GAZZA) AND EGYPT. *Zool. Soc. Egypt Bull.* 21: 29-34. 1966/1967. [From Biol. Abstr. 51(3), 1970.] *WR 139: 119*
[Cairo Univ., Cairo, United Arab Republic.]

Karg, Jerzy, and Tadeusz Mazur. PARTICIPATION OF AMPHIBIANS IN THE NATURAL REDUCTION OF THE COLORADO BEETLE *(LEPTINOTARSA DECEMLINEATA* SAY*)*. *Ekologia Polska--Ser. A* 17(31): 515-532, 11 figs. 1969. In English with Polish summ. *WR 139: 119*
[Polish Acad. Sci., Turew, Poland.] *"Rana arvalis, Bufo bufo,* and *Pelobates fuscus."*

Kenny, Julian S. THE AMPHIBIA OF TRINIDAD. *Uitgaven Natuurwetensch. Studiekring Suriname Ned. Antillen* 24: 1-78, illus. 1969. [From Biol. Abstr. 51(13), 1970.] *WR 139: 119*
[Univ. West Indies, Trinidad.]

Kleinenberg, S. E., and E. M. Smirina. [METHOD OF DETERMINING THE AGE OF AMPHIBIANS.] *Zool. Zhur.* 48(7): 1090-1094, illus. 1969. [From Biol. Abstr. 51(2), 1970. In Russian with English summ.] *WR 139: 119*
[Acad. Sci. USSR, Moscow, USSR.] *"Rana temporaria."*

Kour, Edna Lynne, and Victor H. Hutchison. CRITICAL THERMAL TOLERANCES AND HEATING AND COOLING RATES OF LIZARDS FROM DIVERSE HABITATS. *Copeia* 1970(2): 219-229. 1 June 1970. *WR 139: 119*
[Univ. R.I., Kingston.] Acclimation temperature significantly affected the Critical Thermal Minima of *Anolis carolinensis, Sceloporus occidentalis, Phrynosoma cornutum,* and *Xantusia vigilis* at some experimental conditions and had a

significant effect upon the Critical Thermal Maxima of *A. carolinensis* and *X. vigilis*. *P. cornutum* had a range of thermal tolerance of approximately 40°C; other species had thermal tolerance ranges of about 30°C. These ranges are correlated with the distribution and ecology of the species studied.--From abstr.

Krawczyk, Stanislaw. FAT AND WATER CONTENT IN SOME ORGANS OF THE COMMON FROG *(RANA TEMPORARIA* L.) IN THE MIDDLE PERIOD OF HIBERNATIONS. *Acta Biol. Cracov. Ser. Zool.* 11(2): 285-294, illus. 1968. [From Biol. Abstr. 51(12), 1970.] *WR 139: 120*
[Teacher Training Coll., Kraków, Poland.]

Lác, Ján. PRISPEVOK KU GEOGRAFICKEJ VARIABILITE JASTERICE MUROVEJ *(LACERTA MURALIS* LAUR.). [GEOGRAPHICAL VARIABILITY OF THE WALL LIZARD *(LACERTA MURALIS* LAUR.).] *Biologia* (Bratislava) 24(5): 406-414, illus. 1969. [From Biol. Abstr. 51(13), 1970. In Czech with German and Russian summ.] *WR 139: 120*
[Kupeckeho Ila, Bratislava, Czechoslovakia.]

Lee, David S. ECOLOGICAL ASSOCIATIONS OF AMPHIBIANS AND REPTILES WITH CERTAIN MARYLAND MAMMALS. *Bull. Md. Herpetol. Soc.* 6(2): 19-21. June 1970. *WR 139: 120*
[Nat. Hist. Soc. Md., 2643 N. Charles St., Baltimore.]

Littlejohn, M. J., and A. A. Martin. ACOUSTIC INTERACTION BETWEEN TWO SPECIES OF LEPTODACTYLID FROGS. *Animal Behaviour* 17(4): 785-791, 2 figs. Nov. 1969. *WR 139: 120*
[Univ. Melbourne, Parkville, Victoria, Australia.] *"Crinia victoriana* and *Pseudophryne semimarmorata."*

Mechler, B. LES GECKONIDES DE LA COLOMBIE. [GEKKONIDS IN COLOMBIA.] *Rev. Suisse Zool.* 75(2): 305-371, illus. 1968. [From Biol. Abstr. 51(5), 1970. In French with English summ.] *WR 139: 120*
[Univ. Geneva, Geneva, Switzerland.]

Meyer, John Raymond. A BIOGEOGRAPHIC STUDY OF THE AMPHIBIANS AND REPTILES OF HONDURAS. *Ph.D. thesis, Univ. Southern Calif.* 604 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 120*
A hypothetical developmental history of the Honduran herpetofauna is presented. The herpetofauna of the country is separated into historic elements reflecting presumed different developmental histories.

Neemchenko, M. G. [THE DISTRIBUTION AND BIOLOGY OF THE GREEN LIZARD *LACERTA VIRIDIS* LAUR. IN CHECHENO-INGUSHIYA.] *Uch. Zap. Checheno-Ingushskogo Gos. Pedagog. Inst.* 30: 37-39. 1968. [From Biol. Abstr. 51(3), 1970, from Referat. Zhur., Biol., 1969, no. 5I296. Transl. of Russian abstr.] *WR 139: 120*

Nelson, William F. NOTES ON PARTURITION AND BROOD SIZES IN *STORERIA OCCIPITOMACULATA*. *J. Tenn. Acad. Sci.* 14(1): 20-21. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 120*
[Univ. Tenn., Martin.]

Okulova, N. M. [THE EFFECT OF EXTERNAL TEMPERATURES ON THE ACTIVITY, BEHAVIOUR AND BODY TEMPERATURE OF *EREMIAS ARGUTA*.] *Zool. Zhur.* 48(10): 1500-1506, illus. 1969. [From Biol. Abstr. 51(12), 1970. In Russian with English summ.] *WR 139: 120*
[Acad. Med. Sci. USSR, Moscow, USSR.] "Lacertidae."

Opatrný, Evžen. PŘÍSPĚVEK K POZNÁNÍ POTRAVY NAŠICH VODNÍCH SKOKANŮ *(RANA RIDIBUNDA* PALLAS, *RANA ESCULENTA* LINNÉ). [THE FOOD OF OUR WATER FROGS *RANA RIDIBUNDA* AND *RANA ESCULENTA*.] *Acta Univ. Palacki. Olomuc. Fac. Natur. Biol.* 28: 133-139, illus. 1968. [From Biol. Abstr. 51(13), 1970. In Czech with German summ.] *WR 139: 120*
[Univ. Karlovy, Prague, Czechoslovakia.]

Opatrný, Evžen. ROČNÍ CYKLUS SKOKANA SKŘEHOTAVÉHO, *RANA RIDIBUNDA* PALLAS 1771. [THE ANNUAL CYCLE OF *RANA RIDIBUNDA* PALLAS 1771.] *Acta Univ. Palacki. Olomuc. Fac. Natur. Biol.* 28: 141-150, illus. 1968. [From Biol. Abstr. 51(13), 1970. In Czech with German summ.] *WR 139: 121*
[Univ. Karlovy, Prague, Czechoslovakia.]

Opatrný, Evžen. POZNÁMKA K BIOMETRICE A BIONOMII SKOKANA ŠTÍHLÉHO, *RANA DALMATINA* BONAPARTE 1839. [OBSERVATIONS ON THE BIOMETRICS AND BIONOMY OF THE FROG *RANA DALMATINA* BONAPARTE 1839.] *Acta Univ. Palacki. Olomuc. Fac. Natur. Biol.* 28: 151-154. 1968. [From Biol. Abstr. 51(13), 1970. In Czech with German summ.] *WR 139: 121*
[Univ. Karlovy, Prague, Czechoslovakia.]

Peters, James A. DICTIONARY OF HERPETOLOGY / A BRIEF AND MEANINGFUL DEFINITION OF WORDS AND TERMS USED IN HERPETOLOGY. *Hafner Publishing Co.* (New York & London). viii + 392 p. + 13 figs., 5.75 x 8.5 in. 1964. Price $11.50. *WR 139: 121*
"More than 10,000 articles and 500 books have been reviewed in the preparation of this dictionary, resulting in the inclusion of more than 3,000 words and terms. The primary emphasis lies on terms invented by herpetologists themselves for specialized use, but also included are well-known words that are particularly significant in the field, or that have a meaning or application in the field different from that generally known."

Pritchard, Peter C. H. THE SURVIVAL STATUS OF RIDLEY SEA-TURTLES IN AMERICAN WATERS. *Biol. Conserv.* 2(1): 13-17, illus. 1969. [From Biol. Abstr. 51(11), 1970.] *WR 139: 121*
[Univ. Fla., Gainesville.] *"Lepidochelys kempi* and *L. olivacea."*

Pyburn, William F. BREEDING BEHAVIOR OF THE LEAF-FROGS *PHYLLOMEDUSA CALLIDRYAS* AND *PHYLLOMEDUSA DACNICOLOR* IN MEXICO. *Copeia* 1970(2): 209-218. 1 June 1970. *WR 139: 121*
[Univ. Texas, Arlington.] Observations on breeding behavior and nesting habits in different species of *Phyllomedusa* support ideas of relationships based on foot structure. The female must have water available for utilization at time of oviposition for success of the embryo. Leaf-breeding appears to have evolved from the habit in pond breeders of attaching the eggs to emergent vegetation near the water surface.--From abstr.

Reese, Robert William. THE TAXONOMY AND ECOLOGY OF THE TIGER SALAMANDER *(AMBYSTOMA TIGRINUM)* OF COLORADO. *Ph.D. thesis, Univ. Colo.* 164 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 121*
The ecology of *Ambystoma tigrinum melanostictum, A. t. nebulosum,* and *A. t. mavortium* was studied and demonstrated differences among subspecies habits.

Sanders, Herman O. PESTICIDE TOXICITIES TO TADPOLES OF THE WESTERN CHORUS FROG *PSEUDACRIS TRISERIATA* AND FOWLER'S TOAD *BUFO WOODHOUSII FOWLERI*. *Copeia* 1970(2): 246-251. 1 June 1970. *WR 139: 121*
[Fish-Pesticide Res. Lab., Bur. Sport Fisheries & Wildl., Columbia, Mo.] Lindane was the least toxic insecticide to *Pseudacris triseriata* tadpoles and *Bufo woodhousii* tadpoles. Herbicides were generally less toxic than most insecticides. DDT was 2.2 times more toxic to four and five-week-old *Bufo* tadpoles after a 24 hr exposure, than to those from one to three weeks of age. An increased sensitivity to DDT was recorded for *Bufo* tadpoles from one through seven weeks of age.--From abstr.

Shimanskii, A. M. [COMPARATIVE ANALYSIS OF VARIABILITY IN BISEXUAL AND PARTHENOGENETIC POPULATIONS OF ROCK LIZARDS OF THE CAUCASUS (SUBGENUS *ARCHAOLACERTA*).] *Zhur. Obshch. Biol.* 30(5): 561-571. 1969. [From Biol. Abstr. 51 (8), 1970. In Russian with English summ.] *WR 139: 121*
[Acad. Sci. USSR, Leningrad, USSR.]

Spight, Tom M. THE WATER ECONOMY OF SALAMANDERS: EVAPORATIVE WATER LOSS. *Physiol. Zool.* 41(2): 195-203. 1968. [From Biol. Abstr. 51(1), 1970.] *WR 139: 122*
[Univ. Wash., Seattle.]

Stewart, Margaret M. AMPHIBIANS OF MALAWI. *State Univ. N.Y. Press.* ix + 163 p., 67 figs. + 20 color plates, 8.25 x 10.50 in. 1967. Price $7.50. *WR 139: 122*
The 55 spp. of amphibia known to occur in Malawi are treated. Only members of Anura and Apoda (Caecilians) are described since Caudata are not found south of the Sahara. "The species descriptions note not only distinguishing features for identification, but provide full information on life history and habits. The book contains a key for identification of the species covered, generic characteristics, a glossary, a bibliography, a systematic index of species as well as a general index."

Telford, Sam Sountree, Jr. A COMPARATIVE STUDY OF ENDOPARASITISM AMONG SOME SOUTHERN CALIFORNIA LIZARD POPULATIONS. *Am. Midland Nat.* 83(2): 516-554, 14 figs. Apr. 1970. *WR 139: 122*
[Univ. Fla., Gainesville.] A total of 1485 lizards from southern California, Mexico, Baja California, and nearby islands along the Pacific Coast and in the Gulf of California was examined between March 1962 and May 1964. The results suggest that differing prevalences of parasites at different altitudes may be attributed to: (1) specificity to altitudinally zoned definitive or intermediate hosts; (2) presence of single or multiple potential host species; (3) possible influence by humidity and temperature ranges of air and substrate, as indicated by altitudinal changes in plant communities. Significant differences in infection rates between the sexes occur only in haemosporozoan infections. There are two age group distributional patterns of parasites: high initial infection rates in young animals that show little or no decline with age, and a progressive increase of infection rates with host age.--From abstr.

Tracy, C. Richard, and Jim W. Dole. EVIDENCE OF CELESTIAL ORIENTATION BY CALIFORNIA TOADS *(BUFO BOREAS)* DURING BREEDING MIGRATION. *Bull. S. Calif. Acad. Sci.* 68(1): 10-18, illus. 1969. *WR 139: 122*
[Univ. Wis., Madison.]

Urban, Emil K. NESTING OF THE GREEN TURTLE *(CHELONIA MYDAS)* IN THE DAHLAK ARCHIPELAGO, ETHIOPIA. *Copeia* 1970(2): 393-394. 1 June 1970. *WR 139: 122*
[Haile Sellassie I Univ., P.O. Box 1176, Addis Ababa, Ethiopia.] Eighteen nest sites were discovered on four of the islands.

Valett, Bryan Batson. THE UPTAKE, RETENTION, AND DISTRIBUTION OF ^{60}CO, ^{65}ZN, ^{85}SR, AND ^{131}I IN THE ROUGH-SKINNED NEWT *(TARICHA GRANULOSA)*: A RADIOECOLOGICAL STUDY. *Ph.D. thesis, Oreg. State Univ.* 110 p. 1970. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 122*
The uptake, retention, and distribution of ^{60}Co, ^{65}Zn, ^{85}Sr, and ^{131}I were examined in the rough-skinned newt *(Taricha granulosa)*. With the exception of ^{131}I, the relatively long effective half-lives indicated that the radioactivity would be found in an exposed amphibian population for a considerable time period. Predators of these amphibians could then acquire radioactivity long after the original contamination of the freshwater system. Radioiodine, due to its short effective half-life, would become a hazard only in areas of excessive contamination or where a short food chain is involved.

Vestjens, W. J. M. NESTING, EGG-LAYING AND HATCHING OF THE SNAKE-NECKED TORTOISE AT CANBERRA, A.C.T. *Australian Zool.* 15(2): 141-149, illus. 1969. [From Biol. Abstr. 51(5), 1970.] *WR 139: 122*
[Div. Wildl. Res., CSIRO, Canberra, Australia.]

Vetter, Edwin A. A COMMENT ON THE FEEDING HABITS OF *DRYMARCHON CORALIS COUPERI*. *Bull. Md. Herpetol. Soc.* 6(2): 30-31. June 1970. *WR 139: 123*
[Fla. Southern Coll., Lakeland.] Eastern indigo snake in Florida.

Werth, Robert Joseph. ECOLOGY OF FOUR SYMPATRIC LIZARDS. *Ph.D. thesis, Univ. Colo.* 113 p. 1969. [From Dissertation Abstr. Intern. 30(10B), 1970.] *WR 139: 123*
Interrelationships of *Sceloporus undulatus garmani, Holbrookia maculata maculata, Crotaphytus collaris collaris,* and *Cnemidophorus sexlineatus viridis* were studied. A reduction in interspecific competition exists among the four species based, primarily, on differences in microdistribution, food preferences, body temperatures, and periods of diurnal activity.

Zweifel, Richard G. DISTRIBUTION AND MATING CALL OF THE TREEFROG, *HYLA CHRYSOSCELIS*, AT THE NORTHEASTERN EDGE OF ITS RANGE. *Chesapeake Sci.* 11(2): 94-97, 2 figs. June 1970. *WR 139: 123*
[Am. Mus. Nat. Hist., New York, N.Y.] Abstract: The morphologically identical species of treefrogs, *Hyla chrysoscelis* and *H. versicolor*, differ in the pulse-rate of the mating call, as established by previous workers, but there is much more overlap in the ranges of variation of the two species than has been realized. Individuals of both species may utter calls at from about 25 to 35 pulses per second, so within this range the influence of temperature must be considered in arriving at a specific determination. *Hyla chrysoscelis* is recorded for the first time from Delaware (sympatric with *H. versicolor)* and New Jersey. The northern range limit of this species on the Atlantic Coast is at approximately 39° North latitude, so far as presently known.

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AUTHOR INDEX

	Page		Page
Abbott, Herschel G.	28	Andras, Keve	73
Abe, Hisao	38	Andrzejewski, Roman	21
Abplanalp, H.	92	Aplin, J. A.	60
Abushkevich, P. V.	29	Arledge, Janet G.	29
Ackerman, Ralph	39	Ash, J. S.	6
Adams, Devil Bill	24	Ashby, K. R.	116
Addy, P.	13	Asmundson, Sally M.	41
Adorjan, A. S.	21	Auffenberg, Walter	116
Aguesse, Pierre	4	Austin, George T.	68
Ahlen, Ingemar	48	Autry, D. C.	58
Aitken, Russell Barnett	48	Azbukina, M. D.	47
Alberta	17	Azevedo, J. A., Jr.	8
Albignac, R.	62	Backstrom, Jorgen	7
Alcala, Angel C.	116	Baer, George M.	24
Alcock, John	68	Bagley, G. E.	7
Aleksandrova, I. V.	24	Baker, N. F.	53
Aleksiuk, Michael	41	Baker, Ralph C.	60
Allison, Malcolm N.	12	Baker, Rollin H.	5
Al-Rawy, Mohammed	113	Balat, Frantisek	94
Amadon, Dean	63	Balcells, E.	4
Ambedkar, V. C.	113	Baldwin, Paul H.	16
Andersen-Harild, Pelle	100	Ballinger, Royce E.	116
Anderson, Allen E.	57	Baltzo, C. Howard	60
Anderson, Bertin W.	96	Banks, Richard C.	66
Anderson, Daniel W.	113	Barbehenn, Kyle R.	22,23,38

	Page
Barkovskaya, V. V.	29
Barlow, Jon C.	29
Barnes, Allan M.	24
Barnes, Victor G., Jr.	29
Barsova, L. I.	33
Barth, A.	53
Barth, Edvard K.	100
Barthelmes, D.	17
Bartholomew, George A.	66
Basson, P. A.	48
Bauer, Willy	101
Beaudoin, Jean-Claude	64
Beauregard, M.	24
Beck, M. W. R.	65
Becker, Hans	101
Becker, Kurt	38,42,82
Beecham, John J.	106
Beecher, Sheldon B.	112
Beimborn, Don	75
Bekenov, A.	32
Bell, D. G.	73,75
Belyaev, V. G.	29
Belyaeva, N. S.	29
Bennett, Gordon F.	65
Benson, Denis A.	17,94,98
Berg, G. G.	9
Berge, Frode	48
Berger, Andrew J.	75,113
Bergerud, Arthur T.	88
Berglund, F.	7
Berkson, Gershon	63
Berlin, M.	7
Berns, Vernon D.	46
Berslina, I. P.	4
Berthold, Alfred	73
Berthold, Peter	73
Besser, Jerome F.	16,112
Bettmann, Helmut	92
Bezzel, Einhard	101
Bigg, Michael A.	60
Birnbaum, C.	44
Birney, Elmer C.	29
Bitman, Joel	7
Black, E. Russell, Jr.	82
Black, Jeffery	116
Blagosklonov, K. N.	65
Blake, Charles H.	80
Blanc, Charles P.	116
Blood, Donald A.	48
Blyumental', T. I.	73
Bock, Carl E.	76,113
Boddicker, Major L.	23,57,89
Boeker, Erwin L.	106
Boeson, B. W.	83
Bogan, Michael A.	24
Bogush, A. A.	29
Bohl, Wayne H.	85
Boice, R. C.	60
Boice, Robert	29
Bojarski, Stanislaw	35
Bolschakow, W. N.	20
Borg, Karl	48
Borrett, R. P.	68
Boulos, R.	119
Bourlier, Bob G.	2
Bowden, David C.	57
Bowman, T. J.	83
Boyle, C. L.	7
Brackbill, H.	68
Brandon, Ronald A.	116
Braun, Clait E.	89
Brenner, Fred J.	117
Brenner, Patricia E.	117
Briggs, James N.	91
Britton, P. L.	66
Broadbooks, Harold E.	39
Brom, I. P.	40
Brooke, R. K.	66
Brooks, G. F.	23
Brosselin, Michel	94
Broughton, E.	48
Brown, B. K.	63
Brown, David E.	87
Brown, George W.	57
Brown, I. L.	68
Brown, Jerram L.	80
Brown, Robert Z.	29
Brown, Vinson	76
Brownell, R. L., Jr.	60
Brüggemann, J.	49
Brüll, Heinz	87
Bryant, Eldon J.	106
Bubenik, A. B.	49
Buchalczyk, Anna	30
Buchanan, G. Dale	45
Buchanan, Thomas M.	23
Budd, G. M.	80
Buechner, Helmut K.	76
Buechner, Jimmie H.	76
Buerge, J. F.	8
Buhler, Paul	27
Bullock, J. A.	117
Bunyan, P. J.	7
Burns, John J.	62
Buss, Irven O.	63
Busse, Klaus	117
Butler, P. A.	7
Calisher, Charles H.	84
Call, Mayo White	42
Campbell, C. R. G.	100
Campbell, Howard W.	38
Canivenc, R.	20
Canutt, Paul R.	30
Capel, Stephen W.	92
Carnevale Mijno, Piero	87
Carothers, Steven W.	22
Carpenter, G. P.	62
Carr, Harold D.	8
Carroll, A. L. K.	113
Casnocha, P.	49
Castle, W. T.	8
Caughley, Graeme	49

	Page
Cebula, Jerome J.	91
Cecil, Helene C.	7
Chabreck, Robert H.	17
Chai, Soo-Jeet	41
Chambers, Glenn D.	88
Chapman, Donald I.	49
Chapman, Norma G.	49
Chauvier, G.	21
Chełkowska, Henryka	30
Cherkasskii, B. L.	12
Chichikin, Yu. N.	45
Child, Graham	21,50
Chin, Tom D. Y.	112
Chipanii, V. I.	30
Chłodny, Józef	117
Choate, Thomas S.	89
Choquette, L. P. E.	48
Christensen, Glen C.	89
Christiansen, J. E.	17
Church, Michael	62
Clancey, P. A.	76
Clark, A.	94
Clark, R. B.	65
Clark, S. P.	93
Cleghorn, W. B.	18
Clements, M.	85
Cloudsley-Thompson, J. L.	15
Coady, Karen B.	43
Cochran, Doris M.	117
Cochran, William W.	66
Cogger, H. G.	117
Cole, Ronald E.	32
Coles, R. E. A.	63
Colvin, Dallas V.	30
Colvin, Margaret A.	30
Condee, Ralph W.	80
Connolly, G. E.	53
Cooch, F. G.	94
Cook, Robert E.	80
Coon, Donald Wayne	15
Cooper, J. E.	106
Cooper, K. H.	101
Cope, James B.	25
Cornwallis, R. K.	18
Cornwell, George W.	98
Cornwell, P. B.	30
Cowan, John B.	16
Crabtree, D. Glen	11
Craig, R. M.	87
Craighead, Frank C., Jr.	43
Craighead, John J.	43
Crankshaw, William B.	101
Crawley, M. C.	30
Creutz, Gerhard	45,101
Creutz, Gerhardt	101
Crichton, Elizabeth G.	30
Crichton, V. J.	45
Cromartie, E.	7
Cumming, H. G.	50
Cunningham, M. L.	22
Curry-Lindahl, Kai	5

	Page
Daciuk, J.	4
Dagg, A. I.	62
Dalby, Peter L.	5
Dana, Richard H.	16
Danilov, Nikolai	113
Dansereau, Pierre	4
Darebnicek, B.	92
Dasmann, Raymond F.	2,50
Davant, Pierre	101
Davidson, A. M.	40
Davies, Cliff	99
Davis, Frank M.	82
Davis, Keith	89
Davis, Miriam J.	87
Davis, William B.	24
De Beaufort, Francoise	50
deFreitas, A. S. W.	8
De Grazio, John W.	16,112
De La Fouchardière, M.	15
Demaree, Salome Ross	68
Derevshchikov, A. G.	40
de S. Disney, H. J.	82
Desmeules, Pierre	50
de Vlaming, Victor	15
de Vos, Antoon	2,14,50
Dexter, Ralph W.	74
Dhondt, A. A.	113
Diamond, Jared M.	71,81
Dimock, Edward J. II	16
Dindal, Daniel L.	94
Dinsmore, James J.	68
Dircksen, Jens	95
Dixon, Keith L.	68
Dobrinskii, Lev	113
Dodge, Wendell E.	30
Dole, Jim W.	122
Donaldson, Grace	102
Donaldson, W. E.	8
Doster, Gary L.	86,92
Doto, Irene L.	112
Doucet, J.	106
Douglas, W. A.	82
Dow, Douglas D.	65
Downes, M. C.	14
Downing, Robert L.	57
Draganescu, N.	47
Drewek, John, Jr.	51
Drewien, Rod C.	95
Drost, R.	83
Dubrovskii, Yu. A.	33
Duncan, J. F.	22
Dunford, Christopher	40
Dunks, James H.	112
Dwyer, P. D.	24,25
Dyk, V.	92
Dyrcz, Andrzej	113
Dzieciołowski, Ryszard	51
Ebedes, H.	51
Eddinger, C. Robert	68
Eddleman, Lee E.	4
Edgar, A. T.	114

	Page
Edwards, K. Z.	101
Edwards, Ronald D.	2
Egorov, Yu. E.	42
Egoscue, Harold J.	38
Eiberle, K.	19
Elder, William H.	55
Ellyson, W. J.	3
Ely, C. A.	83
Emlen, John T.	69
Enache, A.	47
Enders, Frank	69
Englert, H. K.	85
Erard, C.	76
Eriksson, Kalervo	81,83
Erkinaro, Elino	30
Ermacoff, Nick	18
Ernst, Carl H.	117
Erskine, Anthony J.	81
Erz, Wolfgang	101
Espmark, Yngve	51
Evans, James	16,27
Ewert, David N.	66
Eymann, H.	105
Fain, A.	30,43
Fairley, J. S.	46
Fallis, A. M.	84
Ferdinand, Lorenz	101
Ferguson, Denzel E.	10
Ferreira, M. M.	117
Festetics, A.	107
Ficken, Millicent S.	69
Ficken, Robert W.	69
Fiedler, Georg	101
Fiedler, Wilhelm	101
Fil', V. I.	51
Fischer, Helga	99
Fischer, Klaus	117
Fisher, K. C.	40
Fisk, R. A.	53
Fitch, Henry S.	118
Fitzwater, William D.	13
Fiuczynski, D.	107
Fleming, Theodore H.	31
Fleury, Alain	101
Flook, Donald R.	48,51
Focke, Eberhard	102
Fog, Mette	45
Folk, Čestmír	110
Folk, G. Edgar, Jr.	6,20,43
Folk, Mary A.	43
Folks, F. Neil	68
Forrester, Donald J.	110
Forsythe, Dennis M.	102
Fowler, D. K.	81
Fox, M. W.	46
Francis, William J.	86
Francq, Edward N.	62
Franz, Richard	118
Fredrickson, Larry F.	95
Freiberg, Marcos A.	118
Freitag, Fritz	102
Fremming, Odd Reidar	76
Frey, Herbert W.	60
Friedmann, Herbert	114
Fries, George F.	7
Frith, H. J.	63
Fruzinski, Boguslaw	95
Funk, Howard D.	95
Gabler, R.	44
Gaisler, Jiri	25
Gambale, S.	28
Gambell, Ray	60
Garbuzov, V. K.	37
Garrett, R. L.	8
Gaskin, David E.	5
Gebczyńska, Zofia	31
Gehring, P. J.	8
George, P. V.	113
George, Uwe	92
Gerell, Rune	45
Gerrish, Robert R.	92
Getz, Lowell L.	31
Geys, J. F.	67
Gheorghiu, V.	47
Ghiselin, Jon	31
Gibbons, J. Whitfield	118
Gibson, Daniel D.	77
Giesecke, D.	49
Gilbert, Douglas L.	56
Gilbreath, J. C.	86
Gilstrap, Richard L.	46
Girdner, Charles L., Jr.	3
Glading, Ben	107
Glading, Charlotte H.	107
Gladkina, T. S.	31
Gliwicz, Joanna	31
Goddard, John	51
Godfrey, Geoffrey A.	65
Godfrey, W. Earl	77
Godoy, Juan Carlos	5
Goethe, Friedrich	6,95
Gogilashvili, G. S.	80
Goin, Coleman J.	117
Golani, Ilan	47
Golley, Frank B.	21
Gollop, J. B.	18
Gooding, C. D.	28
Goss, Richard J.	57
Gottschalk, Cord	101
Grakov, N. N.	40,45
Grant, P. R.	31
Grau, Gerald A.	44
Gray, R. S.	114
Greaves, J. H.	35
Greene, Harry W.	118
Greenhall, Arthur M.	25
Griffin, Donald R.	74
Griffith, Richard E., Jr.	16,27
Griffiths, Mervyn	63
Grigor'ev, N. D.	42
Groenendael, P. Van	110
Grudzinski, Rajmund	95

	Page
Grunwald, Alfons	25
Gruzdev, V. V.	27,40
Guarino, Joseph L.	112
Guenther, Rainer	118
Guess, Charles E.	36
Guillou, J. J.	69,76
Gullion, Gordon W.	90
Guthrie, F. E.	8
Guyetant, R.	118
Guzhevnikov, I. A.	27,32
Gwinner, Eberhard	99
Gysel, Leslie W.	87
Haaften, J. L. van	16
Haas, K.	85
Hadley, Neil F.	77
Haeck, J.	25
Hair, Jay D.	110
Hall, Richard L.	3
Halliday, Kenneth C. R.	69
Halls, Lowell K.	19
Hamilton, R. E.	81
Hamlin, Robert L.	60
Hammer, E. Wayne	32,34
Hanak, Vladimir	25
Hanebrink, Earl L.	81
Haneda, Kenzo	114
Hansson, Lennart	22
Hanzak, J.	64
Harengerd, Michael	102
Harlow, Richard F.	57
Harper, Harold T.	89,92
Harrington, Rube	86
Harris, Herbert S., Jr.	118
Harris, Michael P.	64,102,114
Harris, Susan J.	7
Harrison, C. J. O.	67
Harrison, David L.	32
Harrison, James	95
Harrison, Jeffery	95,99
Harrison, Richard J.	60
Hart, J. S.	8
Hartsuyker, L.	95
Hartung, J.	44
Hartwig, Eike	107
Hasegawa, Megumi	47
Hatch, Jeremy J.	102
Hathaway, Loline Marie	119
Hauri, Rolf	77
Haverschmidt, F.	102,107
Hawkins, R. E.	57,58
Haynes, Bessie Doak	43
Haynes, Edgar	43
Hays, Helen	102
Hayward, Kenneth J.	77
Heckenroth, Hartmut	103
Hegdal, Paul L.	27
Heidt, Gary A.	45
Heim de Balsac, H.	107
Heinz, Gary H.	87
Helminen, Matti	89
Henderson, C. A.	82
Henry, Vernon G.	52
Hepp, K.	103
Herbert, Martha F.	70
Herman, Carlton M.	12,95
Herman, S. G.	8
Hessle, Ann Charlotte	72
Hessler, Edward	87
Heusser, H.	119
Hewson, Raymond	69
Heyland, Joan	50
Hickey, Joseph H.	113
Hickling, Grace	74,77
Hilden, Olavi	81
Hill, P.	14
Himes, J. A.	60
Hinaidy, H. K.	53
Hirt, Mrs. Joseph A.	92
Hlavka, Gene	90
Hoff, Carolyn L.	119
Hoffmann, L.	95
Hoffmeister, Donald F.	22,25
Hogstad, Olav	81
Hokanson, Hilding L.	3
Holcomb, Larry C.	111
Holler, Nicholas R.	27
Hood, Glenn A.	38
Hopper, Richard M.	95
Hoppes, Ronald R.	3
Horak, Gerald J.	103
Hori, Eitaro	38
Hornocker, Maurice G.	52
Hough, K.	69,111
Houston, Douglas B.	52
Howard, Walter E.	32,34
Howell, D. J.	27
Howells, Gareth	88
Howes, J. R.	85
Hromas, Josef	53
Hubbs, Carl L.	62
Hublé, J.	113
Hudec, Karel	96
Huff, Jane N.	45
Hugghins, Ernest J.	23,57,89
Hughes, Maryanne Robinson	67
Humirski, Stanislaw	32
Humphrey, Stephen R.	25
Hunt, E. G.	8
Hunter, Brian F.	98
Hurcomb, Lord	6
Hussein, M. Fawzy	119
Hutchison, Victor H.	119
Huxley, Julian	6
Hyla, Werner	77
Hyvärinen, Heikki	25
Ickes, Roy A.	69
Ikeda, Osamu	38
Imaizumi, Tadaaki	25
Imaizumi, Yoshinori	25
Imber, M. J.	83
Impekoven, M.	105
Impekoven, Monica	96

	Page
Imre, Patkai	74
Ingles, Lloyd G.	22
Ingold, P.	105
Inst. Biol. Akad. Nauk Kirg. SSR	32
Isensee, A. R.	9
Ismagilov, M. I.	32
István, Sterbetz	96,99
Ivanter, E. V.	25
Iygi, A.	99
Jackson, H. D.	68
Jackson, Jerome A.	69,114
Jackson, Ronald F.	60
Jackson, William B.	39
Jaczewski, Z.	52
Jaeger, Edmund C.	5
Jakimchuk, R. D.	96
Jane, Paul L.	72
Jansen, J., Jr.	53
Janzen, Daniel H.	44
Jarvis, M. J. F.	66,114
Jarvis, Robert Leo	99
Jefferies, D. J.	109
Jehl, Joseph R., Jr.	77
Jenkins, David	90
Jenkins, Robert E.	107
Jenkinson, Marion Anne	69,70
Jenning, Wolf	8
Jennings, D. M.	7
Jernelöv, A.	9
Jessen, Robert L.	96
Johnels, A. G.	9
Johnsgard, P. A.	96
Johnson, Jim	17
Johnson, Murray L.	34
Johnston, D. E.	43
Johnston, David W.	77
Johnston, Raymond E.	90
Jones, Glenn	93
Jones, J., Jr.	111
Jones, R. N.	99
Jones, Robert D., Jr.	96
Jonkel, C. J.	43
Jorgensen, Clive D.	32
Junge, C.	107
Karczewski, Benedykt	35
Karg, Jerzy	119
Karlson, Alfred G.	86
Karpovich, V. N.	4
KArst, K.	49
Karvlin, B. E.	33
Kasymov, T. A.	34
Katz, Herbert	3
Katz, Marjorie	3
Kaul, D. K.	33
Kay, Fenton R.	119
Kazama, Tatsuo	77
Kear, Janet	99
Kearney, P. C.	9
Keeler, James E.	111
Keep, M. E.	23
Keil, Werner	103
Keith, J. A.	9
Keith, Lloyd B.	108
Kellogg, Forest E.	86,92
Kelsall, John P.	20
Kennedy, H. J.	67
Kennedy, J. R.	65
Kenny, Julian S.	119
Kepler, Cameron B.	70
Keve, András	103
Khamaganov, S. A.	39
Khan, R. A.	84
King, Judith E.	61
King, Warren B.	70
Kiris, I. D.	41
Kirkpatrick, Ralph D.	20,101
Kirkpatrick, Roy L.	28
Kir'yanov, G. I.	28,33
Kish, Frank	110
Kjos, Charles G.	58,66
Kleinenberg, S. E.	119
Klemm, Werner	103
Klimstra, W. D.	57,58
Klonglan, Eugene D.	90
Knecht, S.	70
Ko, Ru-Chiung	86
Kock, Dieter	25
Kocwa, Elzbieta	103
Kogai, V. M.	61
Kohlus, H.	6
Kolenosky, G. B.	21
Kolonin, G. V.	23
Komarova, L. V.	33
Konig, Claus	107
Kopein, Ken	113
Koplin, James R.	16
Korsakov, G. K.	18
Korsakova, I. B.	42
Korschgen, Leroy J.	88
Korytin, S. A.	47
Koshkina, T. V.	33
Kostron, Karel	53
Kotrly, A.	53
Kour, Edna Lynne	119
Krapu, Gary L.	80,96
Krawczyk, Stanislaw	120
Krebs, Charles J.	33
Krishnamurthy, K.	39
Kristoffersson, Rolf	63
Kroymann, Burkhard	103
Krull, John N.	18
Krzywinski, Andrzej	103
Kučera, Ladislav	107
Kuhk, Rudolf	107
Kuhn, Lee W.	26
Kulicke, Horst	33
Kumari, E.	74
Kumerloeve, Hans	78,104
Kuroda, Nagahisa	81
Kutzer, E.	53
Kvaerne, Mathis	78

	Page
Kverno, Nelson B.	16
Kydyraliev, A. K.	26
La Comm. L'Avifauna Belge	76
Lác, Ján	120
Lackey, James Alden	26
Lambert, K.	104
Lamely, L. W.	58
Lanyon, Wesley E.	64,66
Larsen, Holger S.	15
Larson, Joseph S.	42
Larsson, T.	78
Laskey, Amelia R.	70,83
Laughrin, Lyndal	47
LaVal, Richard K.	26
Lavrent'ev, N. I.	39
Lavrinenko, A. E.	28,33
Lavrov, I. K.	33
Lavrova, M. Ya.	12,33
Leach, Howard R.	108
Lebreton, Philippe	74
Lee, David S.	120
Lee, James O., Jr.	16
LeFebvre, Paul W.	111
Legler, Randall Phar, Jr.	28
Lengacher, H.	105
Lengacher, H. J.	105
Leonhard, Hermann	90
LeRiche, J. D.	50
Lesnyak, L. P.	34
Lieff, Bernard C.	99
Ligon, J. David	70
Lill, Alan	114
Lindberg, Peter	114
Lindmeier, John P.	96
Lindner, D. A.	117
Lindsey, Gerald D.	38
Ling, John K.	20,61
Lipin, S. I.	73
Lippens, Leon	81
Lissaman, P. B. S.	70
Littlefield, Carroll D.	108
Littlejohn, M. J.	120
Liu, I. K. M.	47
Ljunggren, Lars	9,93
Lochman, J.	53
Locke, Louis N.	105,108
Logsdon, Heywood Stevan	53
Longhurst, W. M.	53
Lord, Rexford D.	84
Loshakov, A. S.	114
Lott, Dale F.	112
Low, J. B.	17
Lukoschus, F.	30
Lund, Hj. Munthe-Kass	100
Luttich, Stuart	108
L'vov, I. A.	28
Lynch, James F.	76
Lyon, L. Jack	3
MacBriar, Wallace N., Jr.	67
MacDonald, Duncan	93
Macdonald, J. W.	109
Macdonald, R.	97
MacInnes, Charles D.	99
Mackie, Richard J.	19
Mackintosh, N. A.	61
MacRoberts, Michael H.	70
Maher, William J.	115
Mahrt, Jerome L.	41
Makos, John J. III	85
Mamedov, M. M.	23
Manikowski, Stanisław	104
Manly, B. F. J.	13
Manucharyan, G. G.	115
Manwell, Reginald D.	85
Marin, S. N.	37
Marion, Ken R.	116
Marsden, Halsey M.	27
Marsh, Rex E.	32,34
Marshall, Joe	78
Marshall, William H.	90,104
Marten, Gerald G.	13
Martin, A. A.	120
Martin, A. D.	35
Martin, Dale N.	20
Martin, Neil S.	90
Martin, Paul	29
Martin, Robert E.	34
Martinsen, David L.	26
Maser, Chris	32,34
Mate, Bruce R.	61
Mazur, Tadeusz	117,119
McCall, James D.	20
McCaskie, Guy	78
McCullough, Dale R.	21
McCutchen, Henry E.	43
McDowall, R. M.	83
McDowell, Robert D.	14
McIntosh, D. L.	63
McKenzie, H. R.	104
McKinney, Ted D.	28
McKnight, Donald Edward	97
McLachlan, G. R.	74
McManus, John J.	34
McNeil, R.	82
Meanley, Brooke	70
Mech, L. David	47
Mechler, B.	120
Medin, Dean E.	57
Mehl, Reidar	12
Meininger, D.	76
Meise, Wilhelm	75
Mele, Joseph A.	34
Mendelsohn, H. P.	78
Mendelsohn, J. M.	78
Mengel, Robert M.	69,70
Mensch, Jerry L.	56
Merrill, Howard A.	16
Meslow, E. Charles	108
Mevaldt, L. R.	68
Meyer, John Raymond	120
Michurin, L. N.	78
Middlemiss, Ernest	74

430-877 O - 71 - 9

	Page
Middleton, A. D.	14
Mikkola, Heimo	108
Mikkola, Kauri	108
Millar, John S.	41
Miller, Frank L.	58
Miller, M. W.	9
Mironenko, O. N.	78
Misonne, Xavier	23
Misra, Raj K.	99
Mitchell, Brian	53
Mitchell, H. B.	55
Miyamoto, Kenji	38
Mohr, Erna	54
Mokeeva, T. M.	31
Molodovskii, A. V.	97
Monson, Gale	78
Montgomery, G. G.	58
Moore, Jerry A.	42
Moore, N. W.	17
Moreau, Guy	74
Morley, H. W.	8
Morrell, Gillian M.	71
Morse, Douglass H.	71
Moynihan, M.	115
Mrosovsky, N.	40
Mueller, Helmut C.	71
Mugaas, John N.	67
Müller, J.	12
Müller-Using, D.	45
Munting, A. J.	30
Murai, Eva	34
Murray, Barbara M.	22
Murray, David F.	22
Murray, John B.	108
Murton, R. K.	66,93
Mussehl, Thomas W.	90
Mykytowycz, R.	28
Myrberget, Svein	43,47
Myrcha, Andrzej	115
Nakasawa, Hiroshi	38
Nash, R. G.	9
Nass, Roger D.	38
Nauman, Lyle Edward	97
Neemchenko, M. G.	120
Neitro, William A.	34
Nekipelov, N. V.	78
Nekrasov, Evgenii	113
Nellis, Carl H.	41
Nelson, Maynard M.	87
Nelson, William F.	120
Nero, Robert W.	91
Neub, Martin	104
Newman, John A.	108
Newton, I.	100
Nicht, M.	46
Nielsen, Bent Pors	78
Niethammer, G.	64
Nomsen, Richard C.	88
Norderhaug, Magnar	97
Norris, Kenneth S.	61
Nouvel, J.	21
Nulle, Curtis William	100
Nuratdinov, T.	20
Nüsslein, F.	54
Obara, Iwao	25
Obbard, M.	99
Oberholzer, A.	105
Ochirov, Yu. D.	22
Oelke, Hans	74,97
O'Gara, Bart W.	54
Ogata, Kazuki	39
Ognev, V. A.	10
Ohmart, Robert D.	10
Okulova, N. M.	120
Olert, Juergen	26
Oliver, William W.	71
Olney, P. J. S.	97
Olson, Charles E., Jr.	21
Olson, L. D.	86
Oniki, Yoshika	71
Opatrný, Evžen	120,121
Øritsland, N. A.	62
O'Shea, Thomas	56
Ota, Kasio	34
Otsu, Shoei	34
Ott, J.	119
Owen, John S.	6
Owen, Ray B., Jr.	97
Ozoga, John J.	58
Palmer, Kenton L.	92
Palmer, Thomas K.	83
Palmer, Walter L.	92
Palmisano, Angelo W., Jr.	3
Panin, V. Ya.	54
Parker, Richard L.	12
Parrack, J. D.	73
Parrish, John M.	98
Parsons, David R.	96
Partch, Max	91
Pasanen, Seppo	26
Pattie, Donald L.	26
Paul, Adrian	98
Pavlov, B. K.	41
Payne, R. B.	67
Pearson, Henry A.	59
Pelikan, Jaroslav	38
Pengelley, E. T.	41
Pennycuick, L.	82
Peoples, S. A.	34
Pepper, S. R.	67
Peracchi, A. L.	26
Perrin, William F.	62
Peshkov, B. I.	108
Peters, James A.	121
Peterson, Roger Tory	64
Petit, Pierre	101
Phillips, Allan	78
Picozzi, N.	90
Pielowski, Z.	54
Piening, C.	13
Pierce, William R.	4
Piggins, David J.	62

	Page
Pikula, Jiri	115
Pilarska, J.	28
Pimlott, Douglas H.	54
Pingale, S. V.	39
Pinowski, Jan	115
Pinter, Aelita J.	34
Pipers, Frank S.	60
Pirlot, Paul	26
Platt, D. R.	86
Poland, Jack D.	24
Pollock, N. C.	14
Ponomarev, N. A.	37
Pouyet, Jean-Claude	74
Power, Dennis M.	112
Prakash, Ishwar	34
Prasad, M. R. N.	41
Prestt, Ian	109
Prestwood, Annie K.	92
Pretzmann, G.	35
Preuss, Niels Otto	82
Prince, Harold H.	98
Pritchard, Peter C. H.	121
Procter, John W.	27
Proctor, Vernon W.	15
Prunte, Werner	102
Puchkovskii, S. V.	27
Purchase, D.	27,74
Purtov, S. M.	40
Pyburn, William F.	121
Pyn'ko, R. G.	35
Pyrah, Duane	66
Queal, Leland M.	21
Quink, Thomas F.	28
Radda, A.	35
Radwan, M. A.	17
Ramaswami, L. S.	33
Ramsey, Jed J.	67
Ratcliffe, D. A.	10
Ray, Carleton	62
Rea, Amadeo M.	82
Redfern, R.	35
Reese, Robert William	121
Reichel, W. L.	7
Reid, Brian	115
Reimov, R.	20
Remmert, Herrmann	5
Rempe, Udo	27
Rendahl, Hialmar	75,115
Rettig, Klaus	78
Reynolds, Hudson G.	36
Rhodes, Allen	81
Richardson, Wayne E.	3
Ricklefs, R. E.	83
Riney, T.	14
Risebrough, R. W.	10
Ritcey, R. W.	54
Ritter, Georg	33
Rittinghaus, Hans	104
Robel, Robert J.	91
Roben, Peter	20
Robertson, Ian	98
Robin, Paul	79
Robinson, J.	10
Rockenbauch, Dieter	109
Rockwell, H. W.	18
Rodionov, M. A.	75
Roest, Aryan I.	62
Rogers, John P.	44
Romankowowa, Anna	35
Romanov, A. N.	46
Rood, J. P.	35
Rosato, Peter	10
Rosenzweig, M. L.	13,35
Ross, Bruce A.	63
Rossbach, Rudolf	103
Rossi, L.	84
Roth, Harald H.	21
Rowe, F. P.	35
Rowley, Ian	112
Royama, T.	64
Rudd, R. L.	8
Rumsey, Robert L.	83
Ruos, James L.	93
Ruppell, Georg	104
Rusch, Donald H.	108
Rusev, G.	41
Russell, Eleanor M.	63
Rutter, Russell J.	115
Rybar, Petr	109
Ryder, John P.	100
Sabilaev, A. S.	35
Sachs, C.	54
Sachs, R.	54
Samuel, David Evan	115
Sanders, Herman O.	121
Sanderson, Glen C.	44,46
Santamaria, J.	13
Sapargel'dyev, M.	115
Sawicka-Kapusta, Katarzyna	35
Sayler, Annie	36
Schäfer, E.	54
Scharf, William C.	104
Scheer, U.	70
Scheffer, Victor B.	62
Schenk, Helmar	79
Schenkel, Rudolf	54
Schenkel-Hulliger, Lotte	54
Schimke, E.	44
Schipper, E.	13
Schladweiler, Philip	90
Schmekel, L.	105
Schmid, E.	15
Schneider, J.	85
Schnetter, M.	85
Schoener, T. W.	13
Schoennagel, Erich	79,109
Schreiber, Ralph W.	104
Schroeder, Charles H.	98
Schroeder, Max H.	94
Schutz, Walter E.	64
Schüz, Ernst	75
Schwalbe, Paul Wayman	83

	Page
Schwarb, Robert G.	112
Scott, R. E.	109
Sealander, John A.	36
Selander, Robert K.	112
Serafiński, Włodzimierz	54
Seth, Pushpa	41
Setina, M.	79
Seton-Browne, C. J.	32
Seubert, John L.	111
Sexton, Owen J.	116
Shackleton, Keith	79
Shamurin, V. G.	29
Shark, Brian	82
Sharpe, G. I.	88
Shaw, Samuel P.	19
Shilov, M. N.	37
Shilova, S. A.	10
Shimanskii, A. M.	121
Shollenberger, Carl A.	70
Short, Cathleen	59
Short, Lester L.	115
Shure, Donald J.	22
Shymanski, Frank	91
Sibson, R. B.	104
Siegel, Herbert	101
Siegel, P. B.	98
Silvy, Nova J.	91
Simmons, Norman Montgomery	55
Simon, Noel M.	6
Simpson, C. David	55
Singeisen, C.	105
Siniff, Donald B.	87
Sjolander, Sverre	71,72
Skaggs, M. B.	98
Skead, David M.	79
Skoog, Perarvid	46
Skuncke, Folke	19
Skurat, L. N.	36
Slagsvold, Tore	76
Slater, E.	84
Slater, Peter J. B.	116
Smirina, E. M.	119
Smirnov, A. A.	10
Smith, Blanche A.	77
Smith, E. Linwood	10
Smith, E. Ray	20
Smith, Jerry A.	101
Smith, K. D.	105
Smith, Meredith J.	63
Smith, Neal G.	109
Smith, P.	21
Smith, R. F. C.	63
Smith, S. B.	98
Smith, Susan M.	105
Smithers, C. N.	82
Smyshlyaev, M. I.	41
Smyth, J. Robert, Jr.	85
Snoddy, Edward L.	105
Snyder, Walter A.	57
Sochor, L.	92
Soikkeli, Martti	105
Soivio, Antti	63
Sokolov, V. E.	36
Solman, Victor E. F.	17,84
Solomatin, A. O.	28
Sonin, V. D.	73
Soper, M. F.	105
Southern, William E.	105,109
Spaepen, J.	75
Spalding, D. J.	55
Spann, J. W.	11
Sparrowe, Rollin D.	59
Speek, B. J.	95
Sperber, Georg	110
Spight, Tom M.	122
Spinage, C. A.	55
Springer, Paul F.	59
Spurrel, Francis A.	96
Staaland, Hans	75
Steck, F.	13
Stefanov, St.	41
Stefanski, Raymond A.	68
Steiger, H.	105
Steiner, H. M.	35
Steiniger, F.	36
Stelfox, Henry	98
Stempel, M. E.	87
Stepanyan, L. S.	110
Stephan, Heinz	26
Sterbetz, István	100,103
Sterner, Philip W.	35
Stewart, Margaret M.	122
Steyn, Peter	71
Stickel, L. F.	11
Stickel, W. H.	11
Stickney, Harry Walker	15
Stock, A. Dean	22
Stokes, Ted	79
Stone, Ward B.	85
Storm, G. L.	46
Strazielle, L.	21
Štromar, L.	75,82
Stromberg, Paul C.	94
Studier, Eugene H.	27
Suetens, W.	110
Sugden, Lawson G.	98
Sugizaki, Kazuo	71
Surdan, C.	47
Surkov, V. S.	36
Sutton, George Miksch	79
Suzuki, T.	11,39
Swanson, Gustav A.	14
Szewczyk, Jerzy	103
Szijj, Josef	100
Szwykowska, Maria Małgorzata	91
Taber, Richard D.	55
Tanaka, Ikuo	39
Tanticharoenyos, Prayot	63
Tarasov, N. S.	27,33
Taylor, Archie	7
Taylor, R. H.	55
Telford, Sam Sountree, Jr.	122

Page

Templeton, James R. 67
Tenaza, Richard 63
Teranishi, Kesai 114
Terasse, J. F. 110
Terasse, M. 110
Terborgh, John 71
Terent'ev, P. V. 68
Terranova, E. Vadala 36
Terres, John K. 65
Teshima, Allen H. 36
Tester, John R. 87
Tew, Ronald K. 4
Thaeler, Charles S., Jr. 36
Thas, J. 6
Thiollay, J. M. 110
Thoen, Charles O. 86
Thomas, Donald C. 55
Thomas, F. C. 60
Thompson, James N., Jr. 46
Thompson, William L. 72
Thornton, J. E. 60
Thut, Rudolph N. 72
Tietjen, Howard P. 29
Timken, Richard L. 116
Tinley, K. L. 56
Tolonen, Karl Eric 105
Tomlinson, A. R. 28
Tomlinson, Roy E. 87
Tosh, Fred E. 112
Touskova, Ivana 96
Townsend, A. Clifford 60
Tracy, C. Richard 122
Trainer, D. O. 60
Trauger, David L. 80
Troostwijk, W. J. Doude van .. 94,100
Trost, Charles H. 66
Tschanz, B. 105
Tsuchiya, Kimiyuki 25
Tucker, Richard K. 11
Tulloch, R. J. 72
Turček, Frantisek J. 19,56
Turkowski, Frank J. 36
Turner, John R. G. 71
Twomey, S. Lawrence 29
Udagawa, Tatsuo 17
Udvardy, Miklos D. F. 82
Uhler, Francis M. 105
U.S. Dept. Agriculture 14
Uniyal, V. 39
Urban, David 44
Urban, Emil K. 122
Urban, R. E. 45
Usher, Peter J. 62
Vacin, V. J. 75
Valentinčič, S. 56
Valett, Bryan Batson 122
Van Cauteren, F. 75
van den Bosch, R. 11
Van Peenen, P. F. D. 22
van Tets, G. F. 79,84,106
Van Velzen, Willet T. 106

Page

Varshavskii, S. N. 37
Vauk, Gottfried 107
Vavrušková, J. 84
Verbeek, N. A. M. 54
Verme, Louis J. 56,58
Vershinin, N. M. 37
Vestjens, W. J. M. 84,122
Vetter, Edwin A. 123
Vielliard, J. 76
Viers, Charles E. 91
Villemin, Martial 47
Vincent, John 14
Voet, H. 106
Vohra, Pran 87
Voipio, Paavo 72
Von Braun, Cecilia 72
von Richter, Wolfgang 21,50
Voronova, L. D. 10
Vses. Nauch.-Issled. Inst. Zhivotn. Syr'ya Pushniny 15
Wahlstedt, J. 110
Walin, Tapani 63
Wallace, James T. 37
Wandeler, A. 13
Wardell, John 99
Warner, Dwain W. 96
Watkins, William A. 62
Watson, Adam 90
Watt, Philip G. 91
Watts, C. H. S. 37
Wayre, Philip 6
Weaver, Richard A. 56
Weaver, W. G., Jr. 37
Webb, Robert G. 5
Weigl, Peter D. 39
Weisbrod, A. R. 72
Weller, Milton W. 80,96
Wemmer, Chris 72
Wendland, V. 107
Wenzel, U. D. 44
Werth, Robert Joseph 123
West, Richard R. 112
Westermark, T. 9
Weston, Henry G., Jr. 76
Westöö, G. 11
Westwood, N. J. 66
Whitcomb, Douglas A. 92
Wiedenfeld, C. C. 3
Wierzbowska, Teresa 21
Wilke, Ford 60
Wilkinson, P. R. 85
Williams, Daniel F. 24
Williamson, Kenneth 80
Williamson, Lonnie L. 86
Wilson, Alfred J., Jr. 11
Wilson, Don E. 63
Wilson, Mary F. 73
Wilson, W. O. 92
Wing, Larry D. 63
Wink, Michael 80
Winkel, W. 73,87

	Page		Page
Winterbottom, J. M.	80	Wurster, C. F., Jr.	12
Wishart, William D.	48	Yarrow, Ruth M.	73
Wittenberg, Gerhard	73	Yoshiyuki, Mizuko	25
Wojciechowska, Bożenna	37	Youngson, R. W.	56
Wolhuter, Bruce R.	110	Zaniewski, L.	52
Wolman, Allen A.	11	Zavadil, R.	92
Wolpers, Hans	74	Zejda, Jan	38
Woodard, A. E.	92	Zhordaniya, R. G.	80
Woods, L. A., Jr.	8	Zimmermann, T.	13
Woolf, Alan	56	Zonov, G. B.	73
Woolsey, Norman G.	42	Zumpt, F.	48
Woronecki, Paul P.	112	Zurowski, W.	52
Woulfe, M. R.	84	Zweifel, Richard G.	123

Manuscript for this issue was completed 18 February 1971

U. S. GOVERNMENT PRINTING OFFICE : 1971 O - 420-877

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of this department of natural resources.

The Department works to assure the wisest choice in managing all our resources so that each shall make its full contribution to a better United States now and in the future.

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